```
=> file reg
FILE 'REGISTRY' ENTERED AT 12:38:03 ON 13 FEB 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2004 American Chemical Society (ACS)


=> display history full l1-


     FILE 'HCA' ENTERED AT 12:10:44 ON 13 FEB 2004
L1         39362 SEA (CONDUCT? OR COND#)(2A)(POLYM# OR POLYMER? OR
                 COPOLYM# OR COPOLYMER? OR HOMOPOLYM# OR HOMOPOLYMER? OR
                 TERPOLYM# OR TERPOLYMER? OR RESIN?)
L2         17089 SEA (POLYM# OR POLYMER? OR COPOLYM# OR COPOLYMER? OR
                 HOMOPOLYM# OR HOMOPOLYMER? OR TERPOLYM# OR TERPOLYMER?
                 OR RESIN?)(2A)ELECTROLY?

     FILE 'REGISTRY' ENTERED AT 12:11:06 ON 13 FEB 2004
L3          5610 SEA B/ELS AND PMS/CI
L4        121739 SEA C2H4O OR C3H6O
L5            77 SEA L3 AND LI/ELS
L6           399 SEA L3 AND L4
L7          1408 SEA L3 AND 4/ELC.SUB
L8           191 SEA L6 AND L7
L9          2377 SEA L3 AND X/ELS

     FILE 'HCA' ENTERED AT 12:17:54 ON 13 FEB 2004
L10          322 SEA L8
L11           65 SEA L5
L12           29 SEA L10 AND (L1 OR L2)
L13            8 SEA L11 AND (L1 OR L2)

     FILE 'REGISTRY' ENTERED AT 12:19:17 ON 13 FEB 2004
L14       231554 SEA (C(L)H(L)B)/ELS
L15       109900 SEA L14 (L) X/ELS
L16       136019 SEA L14 (L) O/ELS
L17         6883 SEA L14 (L) 3/ELC.SUB
L18        22617 SEA (L15 OR L16) (L) 4/ELC.SUB
L19         6995 SEA L15 AND L16 AND 5/ELC.SUB
L20         1686 SEA (L17 OR L18 OR L19) AND L3
L21         1495 SEA L20 NOT (L5 OR L8)

     FILE 'HCA' ENTERED AT 12:28:48 ON 13 FEB 2004
L22          785 SEA L21
L23           30 SEA L22 AND (L1 OR L2)
L24            1 SEA L12 AND L13
L25            2 SEA L12 AND L23
```

```
L26             0 SEA L13 AND L23
L27             3 SEA L24 OR L25
L28             7 SEA L13 NOT L27
L29            26 SEA L12 NOT (L27 OR L28)
L30            28 SEA L23 NOT (L27 OR L28 OR L29)


=> file hca
FILE 'HCA' ENTERED AT 12:39:08 ON 13 FEB 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)


=> d l27 1-3 ibib abs hitstr hitind
```

B.D.

L27 ANSWER (1) OF 3 HCA COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 135:61865 HCA
TITLE: "Acid-in-chain" versus "base-in-chain" anionic **polymer electrolytes** for electrochemical devices
AUTHOR(S): Sun, X.; Austen Angell, C.
CORPORATE SOURCE: Department of Chemistry and Biochemistry, Arizona State University, Tempe, AZ, 85287-1604, USA
SOURCE: Electrochimica Acta (2001), 46(10-11), 1467-1473
CODEN: ELCAAV; ISSN: 0013-4686
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

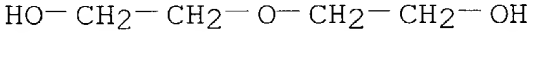
AB We extend an earlier study of high conducting polyanionic (single ion conducting) electrolytes, obtained by Lewis acid plasticization of polyanions in which the in-chain anions are Lewis base in character, to the inverse case in which the Lewis acid is incorporated in the chain. The Lewis acid groups in the chain are spaced by polyethylene oxide segments of variable length. Such "Acid-in-chain" polymers are then turned into polyanions by reaction with a Lewis base anion, leaving the counter cation free to conduct. Depending on the Lewis base strength of the added anion, this type of system can range from strictly polyanionic to weakly anion trapping in nature. Conductivities in the range of 10-5-10-4 S/cm have been obtained. In the case of short interanionic spacers, high conductivities at Tg have been obsd., implying that the conducting modes are decoupled from the segmental modes and that the cond. is therefore superionic glass-like in nature and presumably unicationic. Such polymers may serve alone as solid-state electrolytes, or as the polymer component for polymer-in-salt ionic rubber electrolytes.

IT **345343-67-1DP**, lithium or sodium complexes, cyanate-or bisperfluoromethanesulfonyl imide-contg. **345343-68-2DP**, lithium or sodium complexes, cyanate-or bisperfluoromethanesulfonyl imide-contg. **345343-70-6DP**, lithium or sodium complexes, cyanate-or bisperfluoromethanesulfonyl imide-contg.
(prepn. and ionic cond. of anionic phenylboric-PEO **polymer electrolytes** for electrochem. devices)

RN 345343-67-1 HCA
CN Boronic acid, phenyl-, polymer with 2,2'-oxybis[ethanol] (9CI) (CA INDEX NAME)

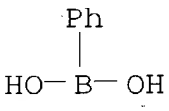
CM 1

CRN 111-46-6
CMF C4 H10 O3



CM 2

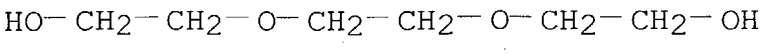
CRN 98-80-6
CMF C6 H7 B O2



RN 345343-68-2 HCA
CN Boronic acid, phenyl-, polymer with 2,2'-[1,2-ethanediylbis(oxy)]bis[ethanol] (9CI) (CA INDEX NAME)

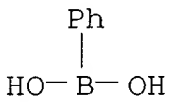
CM 1

CRN 112-27-6
CMF C6 H14 O4



CM 2

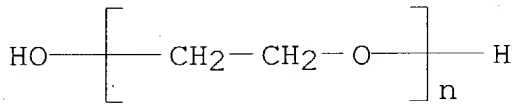
CRN 98-80-6
CMF C6 H7 B O2



RN 345343-70-6 HCA
CN Boronic acid, phenyl-, polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

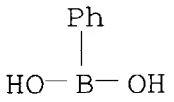
CM 1

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 2

CRN 98-80-6
CMF C6 H7 B O2



CC 36-5 (Physical Properties of Synthetic High Polymers)
Section cross-reference(s): 72
IT Electric apparatus
(electrochem.; prepn. and ionic cond. of anionic phenylboric-PEO **polymer electrolytes** for electrochem. devices)
IT Ionic conductivity
(prepn. and ionic cond. of anionic phenylboric-PEO **polymer electrolytes** for electrochem. devices)
IT Polyelectrolytes
(solid; prepn. and ionic cond. of anionic phenylboric-PEO **polymer electrolytes** for electrochem. devices)
IT 917-61-3P, Sodium cyanate 2363-79-3P, Lithium cyanate 90076-65-6P, Lithium bis(trifluoromethanesulfonyl)imide
(complexes with di,tri-, or polyethylene glycol-phenylboric acid copolymer; prepn. and ionic cond. of anionic phenylboric-PEO **polymer electrolytes** for electrochem. devices)
IT 7439-93-2DP, Lithium, complexes with di,tri-, or polyethylene

glycol-phenylboric acid copolymer, cyanate-or bistrifluoromethanesulfonyl imide-contg., properties 7440-23-5DP, Sodium, complexes with di,tri-, or polyethylene glycol-phenylboric acid copolymer, cyanate-contg., properties **345343-67-1DP**, lithium or sodium complexes, cyanate-or bisperfluoromethanesulfonyl imide-contg. **345343-68-2DP**, lithium or sodium complexes, cyanate-or bisperfluoromethanesulfonyl imide-contg. **345343-70-6DP**, lithium or sodium complexes, cyanate-or bisperfluoromethanesulfonyl imide-contg.
(prepn. and ionic cond. of anionic phenylboric-PEO **polymer electrolytes** for electrochem. devices)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER (2) OF 3 HCA COPYRIGHT 2004 ACS on STN INSTANT APP
ACCESSION NUMBER: 134:223194 HCA
TITLE: Ionically **conductive polymers** containing boron atoms useful for **polymer electrolytes** and electrical devices
INVENTOR(S): Nishiura, Masahito; Kono, Michiyuki; Watanabe, Masayoshi
PATENT ASSIGNEE(S): Dai-Ichi Kogyo Seiyaku Co., Ltd., Japan
SOURCE: PCT Int. Appl., 58 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001018094	A1	20010315	WO 2000-JP5811	20000828
W: CA, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
JP 2001072875	A2	20010321	JP 1999-248887	19990902
JP 2001072876	A2	20010321	JP 1999-248888	19990902
JP 2001072877	A2	20010321	JP 1999-248889	19990902
JP 2001131246	A2	20010515	JP 1999-318000	19991109
CA 2344204	AA	20010315	CA 2000-2344204	20000828
EP 1160268	A1	20011205	EP 2000-955080	20000828
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRIORITY APPLN. INFO.:
JP 1999-248887 A 19990902
JP 1999-248888 A 19990902
JP 1999-248889 A 19990902

JP 1999-318000 A 19991109
WO 2000-JP5811 W 20000828

AB The polymers are of the following types: (1) a dendrimer-like polymer having trivalent B atom at core and wedge point, a heteroatom such as O as linking unit (L), and di- to hexavalent group with mol. wt. of ≥150 linking to the B atom via L, (2) a compd. obtained by crosslinking of a multiarm polymer of B(XRY)3 type [X = heteroatom; R = divalent group having mol. wt. of >150 (e.g., polyoxyethylene group); Y = polymerizable functional group], (3) a high-mol. compd. bearing B atom preferably on side chain end or main chain end, and (4) high-mol. compd. contg. tetravalent B. The **polymer electrolytes** with improved charge-carrying ion capacities are obtained by mixing one or more types of the polymers above with an electrolyte salt such as a lithium salt and an aprotic solvent, e.g., carbonates, lactones, ether, etc., and can be used in batteries or capacitors. Thus, coupling a diol derived from ethylene oxide ring opening reaction with borane gave a 3-arm polymer, 1 g of which was combined with LiBF4 at 1 mol/kg and 2.3 g γ-butyrolactone and cast coated on a glass surface to give a film of **polymer electrolyte.**

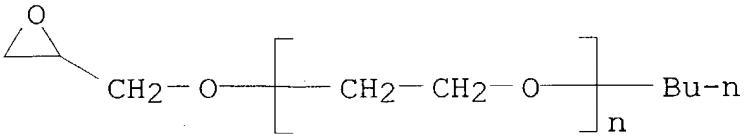
IT **329352-15-0DP,** lithium complexes, anion-contg. (comb, dendritic; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

RN 329352-15-0 HCA

CN Borane, polymer with α-butyl-ω-(oxiranylmethoxy)poly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 126021-43-0
CMF (C2 H4 O)n C7 H14 O2
CCI PMS



CM 2

CRN 13283-31-3
CMF B H3

BH_3

IT **329352-19-4DP**, lithium complexes, bromate- or chlorate-contg. **329352-20-7DP**, lithium complexes, hexafluoroarsenate-contg. **329352-21-8DP**, lithium complexes, anion-contg.
(dendritic, from divergent approach; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

RN 329352-19-4 HCA
CN Borane, polymer with butyloxirane and oxirane (9CI) (CA INDEX NAME)

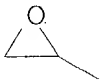
CM 1

CRN 13283-31-3
CMF B H3

BH_3

CM 2

CRN 1436-34-6
CMF C6 H12 O



Bu-n

CM 3

CRN 75-21-8
CMF C2 H4 O

RN 329352-20-7 HCA
CN Borane, polymer with ethyloxirane and oxirane (9CI) (CA INDEX NAME)

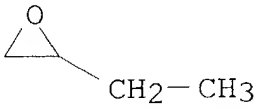
CM 1

CRN 13283-31-3
CMF B H3

BH_3

CM 2

CRN 106-88-7
CMF C4 H8 O



CH_2-CH_3

CM 3

CRN 75-21-8
CMF C2 H4 O

RN 329352-21-8 HCA
CN Borane, polymer with oxirane and propyloxirane (9CI) (CA INDEX NAME)

CM 1

CRN 13283-31-3
CMF B H3

BH_3

CM 2

CRN 1003-14-1
CMF C5 H10 O

Pr-n

CM 3

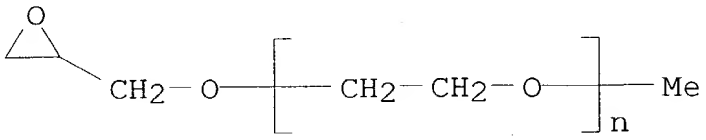
CRN 75-21-8
CMF C2 H4 O

IT **329352-16-1DP**, lithium complexes, anion-contg.
329352-17-2DP, lithium complexes, anion-contg.
329352-18-3DP, lithium complexes, anion-contg.
329352-22-9DP, lithium complexes, tetrafluoroborate-contg.
329352-23-0DP, lithium complexes, hexafluorophosphate-contg.
(dendritic; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

RN 329352-16-1 HCA
CN Borane, polymer with α-methyl-ω-(oxiranylmethoxy)poly(oxy-1,2-ethanediyl) and oxirane, graft (9CI) (CA INDEX NAME)

CM 1

CRN 40349-67-5
CMF (C2 H4 O)n C4 H8 O2
CCI PMS



CM 2

CRN 13283-31-3
CMF B H3

BH_3

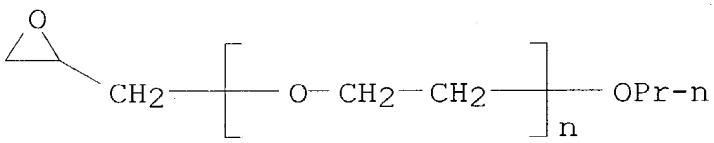
CM 3

CRN 75-21-8
CMF C2 H4 O

RN 329352-17-2 HCA
CN Borane, polymer with oxirane and α-(oxiranylmethyl)-ω-propoxypoly(oxy-1,2-ethanediyl), graft (9CI) (CA INDEX NAME)

CM 1

CRN 143778-95-4
CMF (C2 H4 O)n C6 H12 O2
CCI PMS



CM 2

CRN 13283-31-3
CMF B H3

BH_3

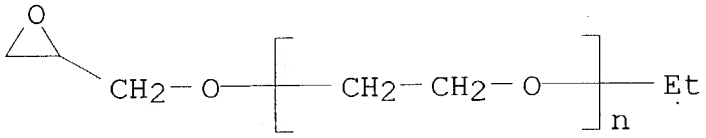
CM 3

CRN 75-21-8
CMF C2 H4 O

RN 329352-18-3 HCA
CN Borane, polymer with α-ethyl-ω-(oxiranylmethoxy)poly(oxy-1,2-ethanediyl) and oxirane, graft (9CI) (CA INDEX NAME)

CM 1

CRN 143686-90-2
CMF (C2 H4 O)n C5 H10 O2
CCI PMS



CM 2

CRN 13283-31-3
CMF B H3

BH_3

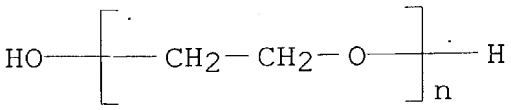
CM 3

CRN 75-21-8
CMF C2 H4 O

RN 329352-22-9 HCA
CN Borane, polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 2

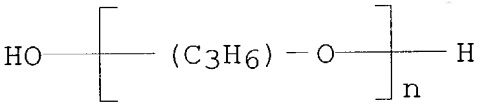
CRN 13283-31-3
CMF B H3

BH_3

RN 329352-23-0 HCA
CN Borane, polymer with α-hydro-ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)] (9CI) (CA INDEX NAME)

CM 1

CRN 25322-69-4
CMF (C3 H6 O)n H2 O
CCI IDS, PMS

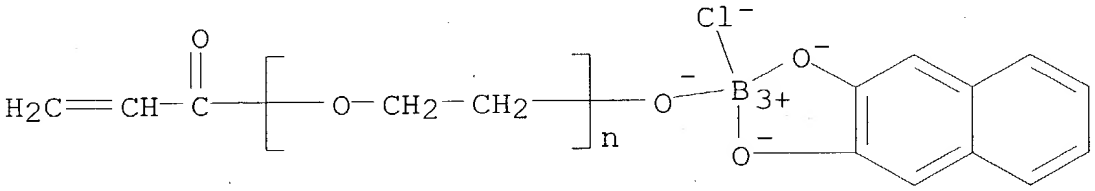


CM 2

CRN 13283-31-3
CMF B H3

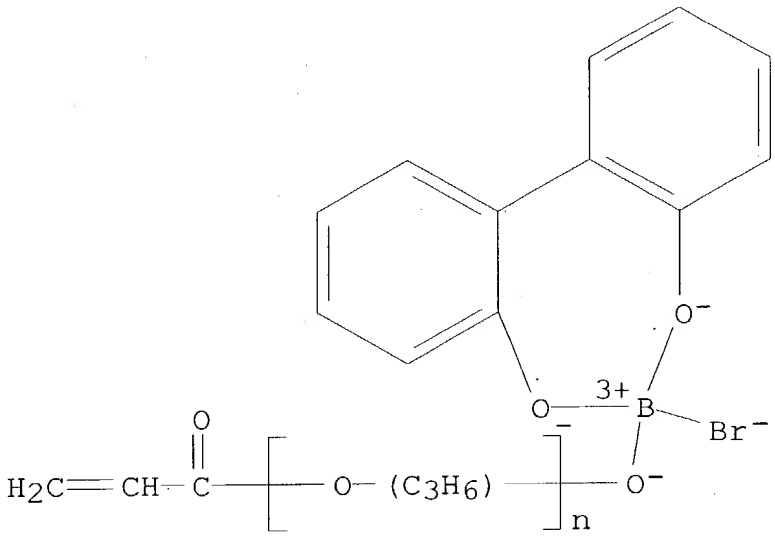
BH_3

IT **329358-76-1P 329688-14-4P 329688-15-5P**
(manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)
RN 329358-76-1 HCA
CN Poly(oxy-1,2-ethanediyl), α-(1-oxo-2-propenyl)-ω-hydro-, ether with lithium (T-4)-chlorohydroxy[2,3-naphthalenediolato(2-)-κO,κO']borate(1-) (1:1) (9CI) (CA INDEX NAME)



● Li^+

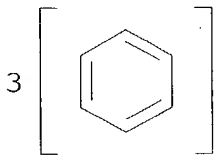
RN 329688-14-4 HCA
CN Poly[oxy(methyl-1,2-ethanediyl)], α-(1-oxo-2-propenyl)-ω-hydro-, ether with lithium (T-4)-[[1,1'-biphenyl]-2,2'-diolato(2-)-κO,κO']bromohydroxyborate(1-) (1:1) (9CI) (CA INDEX NAME)



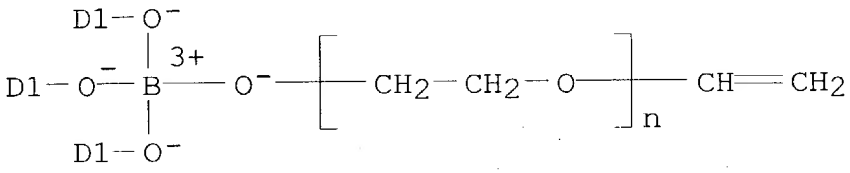
● Li^+

RN 329688-15-5 HCA
CN Poly(oxy-1,2-ethanediyl), α-ethenyl-ω-hydro-, ether with lithium tris(fluorophenolato-κO)hydroxyborate(1-) (1:1) (9CI) (CA INDEX NAME)

PAGE 1-A



3 (D1—F)



PAGE 2-A

● Li^+

IC ICM C08G079-08
ICS H01B001-06; H01M006-18; H01M010-40

CC 35-7 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 52, 76

ST boron core dendrimer like **conductive polymer electrolyte**; aprotic solvent **polymer electrolyte** boron contg **polymer**; battery manuf **polymer electrolyte** boron contg **polymer**; capacitor manuf **polymer electrolyte** boron contg **polymer**; polyoxyethylene borane adduct multiarm **polymer electrolyte**; star block borane polyoxyethylene adduct **polymer electrolyte**; starburst borane polyoxyethylene adduct **polymer electrolyte**

IT Polyoxyalkylenes, preparation
(acrylic, boron-contg. multiarm or dendritic, crosslinked; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT Polyoxyalkylenes, preparation

(boron-contg. multiarm or dendritic, crosslinked; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT Capacitors
Secondary batteries
(lithium ion; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT **Conducting polymers**
Polymer electrolytes
(manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT Dendritic polymers
(manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT Boranes
(reaction products with monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg.; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT 329687-70-9DP, lithium complexes, anion-contg.
(3-arm; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide 14283-07-9, Lithium tetrafluoroborate (LiBF4) 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6 132404-42-3 132843-44-8
(B-contg. multiarm or dendritic polyoxyalkylene polymer complexes; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 646-06-0, 1,3-Dioxolane
(aprotic solvent; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT **329352-15-0DP**, lithium complexes, anion-contg.
(comb, dendritic; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT **329352-19-4DP**, lithium complexes, bromate- or chlorate-contg. **329352-20-7DP**, lithium complexes,

hexafluoroarsenate-contg. **329352-21-8DP**, lithium complexes, anion-contg.
(dendritic, from divergent approach; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT **329352-16-1DP**, lithium complexes, anion-contg.
329352-17-2DP, lithium complexes, anion-contg.
329352-18-3DP, lithium complexes, anion-contg.
329352-22-9DP, lithium complexes, tetrafluoroborate-contg.
329352-23-0DP, lithium complexes, hexafluorophosphate-contg.
(dendritic; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT 67-56-1DP, Methanol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg., preparation 100-02-7DP, p-Nitrophenol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 108-86-1DP, Bromobenzene, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 108-95-2DP, Phenol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg., preparation 109-86-4DP, Ethylene glycol monomethyl ether, boron derives., lithium complexes, anion-contg. 111-87-5DP, Octanol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 120-80-9DP, Catechol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 461-96-1DP, 3,5-Difluorobromobenzene, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 518-05-8DP, 1,8-Naphthalenedicarboxylic acid, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 1806-29-7DP, Biphenyl-2,2'-diol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 26570-48-9DP, Polyethylene glycol diacrylate, polymer with boron-contg. alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 50986-11-3DP, polymer with boron-contg. alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 77716-60-0DP, Polyethylene glycol monovinyl ether, boron derives., lithium complexes, anion-contg. 328312-85-2DP, polymer with boron-contg. alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 329687-75-4DP, polymer with boron-contg. alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 329687-76-5DP, polymer with boron-contg. alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 329687-77-6DP, polymer with boron-contg. alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 329687-79-8DP, polymer with boron-contg. alkenyl-terminated

polyoxyalkylenes, lithium complexes, anion-contg. 329687-80-1DP, polymer with boron-contg. alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 329688-10-0DP, boron derives., lithium complexes, anion-contg. 329688-12-2DP, polymer with boron-contg. alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg. 329688-13-3DP, polymer with boron-contg. alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-contg.
(manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT 75-89-8DP, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium salts 141-82-2DP, Malonic acid, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium salts 771-61-9DP, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium salts 920-66-1DP, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium salts 2378-02-1DP, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium salts 329358-74-9P 329358-75-0P **329358-76-1P** 329687-86-7DP, boron derives., lithium contg. **329688-14-4P** **329688-15-5P**
(manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT 9051-31-4D, Polyethylene glycol monoacrylate homopolymer, lithium complexes, anion-contg.
(multiarm; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT 26403-58-7DP, Polyethylene glycol monoacrylate, boron derives., lithium complexes, anion-contg. 39420-45-6DP, Polypropylene glycol monomethacrylate, boron derives., lithium complexes, anion-contg. 329687-72-1DP, boron derives., lithium complexes, anion-contg. 329687-74-3DP, boron derives., lithium complexes, anion-contg.
(optionally 3-arm; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

IT 329687-81-2DP, boron derives., lithium contg. 329687-82-3DP, boron derives., lithium contg. 329687-83-4DP, boron derives., lithium contg. 329688-16-6DP, boron derives., lithium contg.
(optionally 3-arm; manuf. of B-contg. ionically **conductive polymers** useful for **polymeric electrolytes** and elec. devices)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER (3) OF 3 HCA COPYRIGHT 2004 ACS on STN

electronic conductors

ACCESSION NUMBER: 59:55617 HCA
ORIGINAL REFERENCE NO.: 59:10257h,10258a
TITLE: Polymeric products of decaborane and cyclic ethers
INVENTOR(S): Aftandilian, Victor D.; Knoth, Walter H., Jr.
PATENT ASSIGNEE(S): E. I. du Pont de Nemours & Co.
SOURCE: 2 pp.
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3093660		19630611	US	19590115

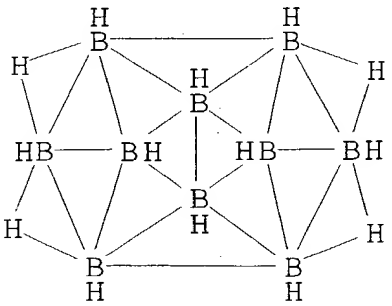
AB Polymeric products contg. 0.1-10% B and capable of reducing Ag+ to metallic Ag are produced by mixing decaborane with a monooxacycloalkane having in the ring 2-4 C atoms which may have CH substituents, e.g. THF or propylene oxide, and allowing the mixt. to react at -50° to +50° at essentially atm. pressure. The relative proportions of the components are not crit. In some cases, the presence of an inert solvent, e.g. Et2O, is of advantage. The reaction time ranges from few min. to several weeks. The products vary from viscous liqs. to solids, the exact structure being unknown.

IT **616884-53-8**, Furan, tetrahydro-, polymer with decaborane
616884-55-0, Propylene oxide, polymer with decaborane
(prepn. of)

RN 616884-53-8 HCA
CN Furan, tetrahydro-, polymer with decaborane (7CI) (CA INDEX NAME)

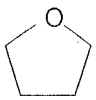
CM 1

CRN 17702-41-9
CMF B10 H14



CM 2

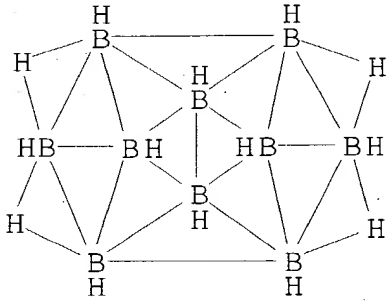
CRN 109-99-9
CMF C4 H8 O



RN 616884-55-0 HCA
CN Propylene oxide, polymer with decaborane (7CI) (CA INDEX NAME)

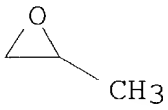
CM 1

CRN 17702-41-9
CMF B10 H14



CM 2

CRN 75-56-9
CMF C3 H6 O



NCL 260346100
CC 45 (Synthetic High Polymers)
IT **Conductors**, electric
(**polymers** as, contg. Ag)
IT 7440-22-4, Silver
(elec. **conductors**, **polymers** contg., by redn. of AgNO3 by decaborane polymers with cyclic ethers)
IT 17702-41-9, Decaborane(12), polymers with cyclic ethers
616884-53-8, Furan, tetrahydro-, polymer with decaborane

616884-55-0, Propylene oxide, polymer with decaborane (prepn. of)

=> d l28 1-7 cbib abs hitstr hitind

Bad date

L28 ANSWER 1 OF 7 HCA COPYRIGHT 2004 ACS on STN
139:398014 Composite lithium ion conductive solid electrolyte and lithium battery.. Inada, Taro; Takada, Kazunori; Kondo, Shigeo; Watanabe, Jun; Sasaki, Takayoshi; Fujinami, Tatsuo; Kanno, Ryoji; Kajiyama, Akihisa; Sasaki, Hideki (National Institute for Research In Inorganic Materials, Japan; Toda Kogyo Corp.; Japan Storage Battery Co., Ltd.; Denki Kagaku Kogyo Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 2003331912 A2 20031121, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-135173 20020510.

AB The disclosed composite electrolyte comprises Li ion-conductive inorg. solid electrolyte and 2-20 vol. % Li-ion permeable polymer whose Li ion transfer rate is ≥ 0.7. Then composite material shows good ion mobility, good flexibility and good formability.

IT **211689-91-7P**
(composite lithium ion conductive solid electrolyte contg.)

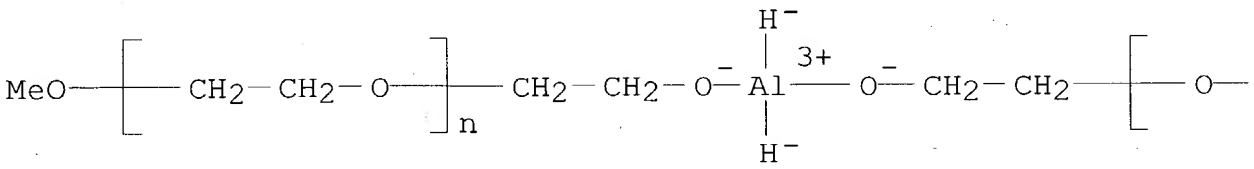
RN 211689-91-7 HCA

CN Boronic acid, phenyl-, polymer with α-hydro-ω-methoxypoly(oxy-1,2-ethanediyl) ether with lithium (T-4)-dihydrodihydroxyaluminate(1-) (2:1) (9CI) (CA INDEX NAME)

CM 1

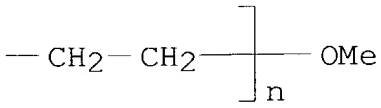
CRN 211689-89-3
CMF (C2 H4 O)n (C2 H4 O)n C6 H16 Al O4 . Li
CCI CCS, PMS

PAGE 1-A



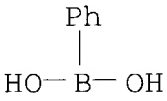
● Li^+

PAGE 1-B



CM 2

CRN 98-80-6
CMF C6 H7 B O2



IC ICM H01M010-36
ICS H01B001-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Secondary batteries
(lithium; lithium ion permeable **polymer**-inorg. **electrolyte** composites for)
IT **211689-91-7P**
(composite lithium ion conductive solid electrolyte contg.)

L28 ANSWER 2 OF 7 HCA COPYRIGHT 2004 ACS on STN Bud date
139:351251 "PolyMOB"-lithium salt complexes: from salt-in-polymer to **polymer**-in-salt **electrolytes**. Xu, Wu; Wang, Li-Min; Angell, C. Austen (Department of Chemistry and Biochemistry, Arizona State University, Tempe, AZ, 85287-1604, USA). Electrochimica Acta, 48(14-16), 2037-2045 (English) 2003. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..
AB Lithium polyMOB (polyMOB = poly(lithium oligoetherato mono-oxalato orthoborate)) was studied as a **polymer**-in-salt **electrolyte** incorporating lithium perchlorate (LiClO4), lithium bis(trifluoromethanesulfonyl)imide (LiTFSI), and lithium tetrafluoroborate (LiBF4). While rubbery solids resulted by mixing polyMOB with high salt contents, only LiClO4 mixts. showed high cond., because only in this case is the lithium cation motion highly decoupled from the structural relaxation. The crystn. of the salt at high salt contents prevents a favorable combination of mech. and elec. properties, but the system provides an excellent example of the principle of the polymer-in-salt ionic rubber electrolyte.
IT **392731-31-6D**, lithium complex electrolytes

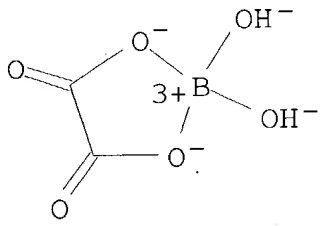
(structure and ionic cond. of lithium salt-polyether oxalatoborate salt-in-polymer to **polymer**-in-salt **electrolytes**)

RN 392731-31-6 HCA

CN Borate(1-), [ethanedioato(2-)-κO1:κO2]dihydroxy-, lithium, (T-4)-, polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

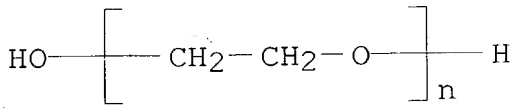
CRN 392731-30-5
CMF C2 H2 B O6 . Li
CCI CCS



● Li^+

CM 2

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 72, 76

IT Crystallization
Glass transition temperature
Ionic conductivity
Polymer electrolytes
(structure and ionic cond. of lithium salt-polyether oxalatoborate salt-in-polymer to **polymer**-in-salt **electrolytes**)

IT 7439-93-2D, Lithium, polyether oxalatoborate complexes 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide
(polyether oxalatoborate complex electrolytes; structure and ionic cond. of lithium salt-polyether oxalatoborate salt-in-polymer to **polymer**-in-salt **electrolytes**
)

IT **392731-31-6D**, lithium complex electrolytes
(structure and ionic cond. of lithium salt-polyether oxalatoborate salt-in-polymer to **polymer**-in-salt **electrolytes**)

L28 ANSWER 3 OF 7 HCA COPYRIGHT 2004 ACS on STN

139:338516 **Polymer electrolytes** from plasticized polyMOBs and their gel forms. Xu, Wu; Angell, C. Austen (Department of Chemistry and Biochemistry, Arizona State University, Tempe, AZ, 85287-1604, USA). Electrochimica Acta, 48(14-16), 2029-2035 (English) 2003. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..

AB Plasticized and crosslinked poly(lithium oligo-etherato mono-oxalato borate)s, (lithium polyMOB)s were studied. In heavily plasticized forms of both polyMOB, and a LiBH4-crosslinked polyMOB, the ionic cond. reached 10-3 S cm-1 at room temp. while single ion cond. is automatically retained. The electrochem. stability window of the electrolytes is up to 5 V, for stainless steel (SS) electrodes. The plasticized forms are fluid, not a gel, due to the low mol. wt. of the polyanions. Freestanding gel electrolytes with high single ionic cond. of 10-4 S cm-1 at ambient temp. can be obtained by incorporation of high mol. wt. poly(Me methacrylate) (PMMA) into the soln. Electrochem. cells using these electrolytes will not suffer from concn. polarization.

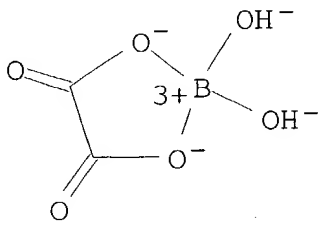
IT **392731-31-6D**, lithium complexes
(**polymer electrolytes**; role of plasticization and compn. on ion cond. of gel electrolytes of poly(ether oxalato borate)-lithium borohydride and effect of PMMA component)

RN 392731-31-6 HCA

CN Borate(1-), [ethanedioato(2-)-κO1:κO2]dihydroxy-, lithium, (T-4)-, polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

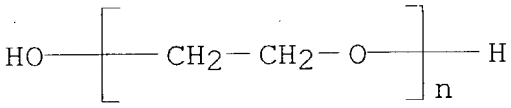
CM 1

CRN 392731-30-5
CMF C2 H2 B O6 . Li
CCI CCS



CM 2

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 72, 76

IT Ionic conductivity
Plasticization
Polymer electrolytes
Redox potential
(role of plasticization and compn. on ion cond. of gel electrolytes of poly(ether oxalato borate)-lithium borohydride and effect of PMMA component)

IT 7439-93-2D, Lithium, polyether oxalatoborate complexes 16949-15-8, Lithium borohydride (LiBH4) **392731-31-6D**, lithium complexes
(**polymer electrolytes**; role of plasticization and compn. on ion cond. of gel electrolytes of poly(ether oxalato borate)-lithium borohydride and effect of PMMA component)

L28 ANSWER 4 OF 7 HCA COPYRIGHT 2004 ACS on STN
136:135484 Novel Polyanionic Solid Electrolytes with Weak Coulomb Traps and Controllable Caps and Spacers. Xu, Wu; Williams, Michael D.; Angell, C. Austen (Department of Chemistry and Biochemistry, Arizona State University, Tempe, AZ, 85287-1604, USA). Chemistry of Materials, 14(1), 401-409 (English) 2002. CODEN: CMATEX. ISSN:

0897-4756. Publisher: American Chemical Society.

AB New chain polymers that contain weakly coordinating anionic groups at controllable anionic sepns. in a polyether backbone are described. The anions are mono-diacyl-capped orthoborate moieties. In this paper, the polyanionic electrolytes with mono-oxalato-capped and mono-malonato-capped orthoborate structures (called "polyMOBs" and "polyMMBs", resp.) are presented. After optimizing the anion sepn., the conductivities of these lithium ion conducting polyanionic electrolytes are found to be high relative to those of most "dry" single-ion-**conducting polymer electrolytes.** A max. ambient cond. of almost 10-5 S cm-1 has been obtained for a solid polyMOB with 14 ethyleneoxy repeating units. The electrochem. "window" for these materials is in excess of 4.5 V. As prepd. here, the polyMOB materials (but not the polyMMBs) contain some residual lithium bis(oxalato)borate (LiBOB) as a side-product, which can be reduced but so far has not been eliminated. The effect of LiBOB content on cond. is small, but it may cause the lithium ion transport no. to be less than 1.0. These inexpensive, benign materials should be very suitable as electrolytes for electrochem. devices requiring single-ion conduction.

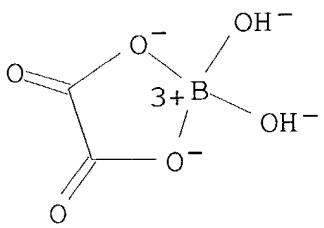
IT **392731-31-6 392731-32-7 392731-34-9**
(polyanionic solid electrolytes with weak coulomb traps and controllable caps and spacers)

RN 392731-31-6 HCA

CN Borate(1-), [ethanedioato(2-)-κO1:κO2]dihydroxy-, lithium, (T-4)-, polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

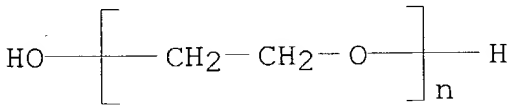
CRN 392731-30-5
CMF C2 H2 B O6 . Li
CCI CCS



● Li^+

CM 2

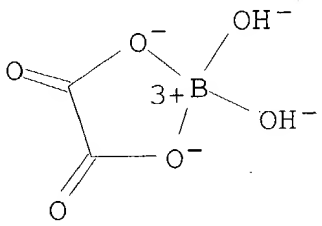
CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



RN 392731-32-7 HCA
CN Borate(1-), [ethanedioato(2-)-κO1:κO2]dihydroxy-, lithium, (T-4)-, polymer with α-hydro-ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)] (9CI) (CA INDEX NAME)

CM 1

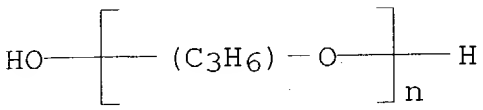
CRN 392731-30-5
CMF C2 H2 B O6 . Li
CCI CCS



● Li^+

CM 2

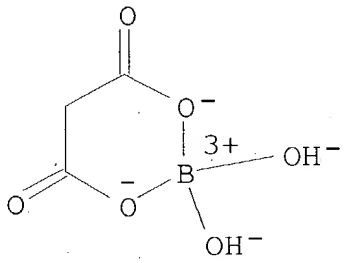
CRN 25322-69-4
CMF (C3 H6 O)n H2 O
CCI IDS, PMS



RN 392731-34-9 HCA
CN Borate(1-), dihydroxy[propanedioato(2-)-κO1:κO3]-, lithium, (T-4)-, polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

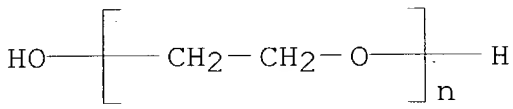
CRN 392731-33-8
CMF C3 H4 B O6 . Li
CCI CCS



● Li^+

CM 2

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 76
IT **392731-31-6 392731-32-7 392731-34-9**
(polyanionic solid electrolytes with weak coulomb traps and controllable caps and spacers)

L28 ANSWER 5 OF 7 HCA COPYRIGHT 2004 ACS on STN
134:57337 Synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s.
Matsushita, K.; Shimazaki, Y.; Mehta, M. A.; Fujinami, T.
(Department of Materials Science, Faculty of Engineering, Shizuoka

University, Hamamatsu, 432-8561, Japan). Solid State Ionics, 133(3,4), 295-301 (English) 2000. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier Science B.V..

AB A series of single ion **conducting** aluminate **polymer electrolytes** were synthesized and their blends with poly(ether)s characterized. A great improvement of mech. properties and processability was obtained upon blending with poly(ethylene oxide) or an ethylene oxide-propylene oxide copolymer. Enhancement of the ionic **cond.** of blended **polymer electrolytes** was obsd. by adding LiCF3SO3 and cationic transference nos. were detd. to be about 0.56.

IT **211689-91-7P**
(synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether))

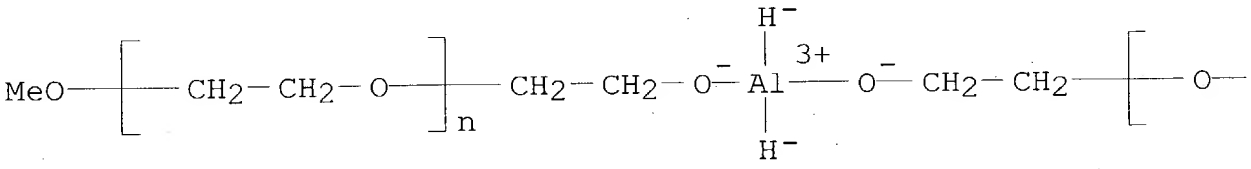
RN 211689-91-7 HCA

CN Boronic acid, phenyl-, polymer with α-hydro-ω-methoxypoly(oxy-1,2-ethanediyl) ether with lithium (T-4)-dihydrodihydroxyaluminate(1-) (2:1) (9CI) (CA INDEX NAME)

CM 1

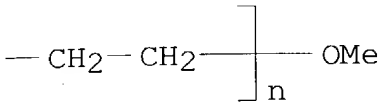
CRN 211689-89-3
CMF (C2 H4 O)n (C2 H4 O)n C6 H16 Al O4 . Li
CCI CCS, PMS

PAGE 1-A



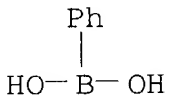
● Li^+

PAGE 1-B



CM 2

CRN 98-80-6
CMF C6 H7 B O2

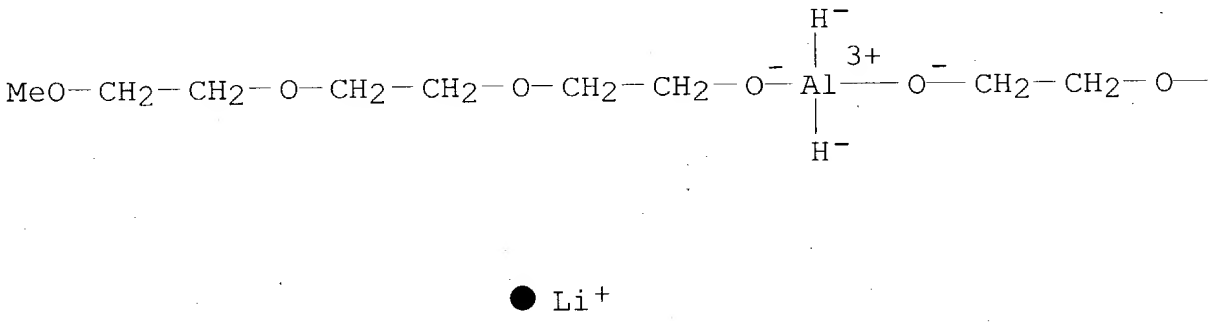


IT **211689-88-2P**
(synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)
RN 211689-88-2 HCA
CN Aluminate(1-), dihydrobis[2-[2-(2-methoxyethoxy)ethoxy]ethanolato-κO]-, (T-4)-, lithium, polymer with phenylboronic acid (9CI) (CA INDEX NAME)

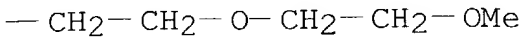
CM 1

CRN 211689-86-0
CMF C14 H32 Al O8 . Li
CCI CCS

PAGE 1-A

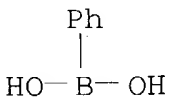


PAGE 1-B



CM 2

CRN 98-80-6
CMF C6 H7 B O2



CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 76
ST aluminoxane boroxane polyethylene glycol synthesis polyether blend lithium electrolyte; ionic **cond** lithium alumohydride **polymer electrolyte**
IT Aluminoxanes
(-polysulfone; synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)
IT Boroxanes
(aluminoxane-; synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)
IT Aluminoxanes
(boroxane-; synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)
IT Transference number
(cationic; synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)
IT Activation energy
(of conduction; synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)
IT Glass transition temperature
Ionic conductivity
Polymer electrolytes
(synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)
IT Polyoxyalkylenes, uses
(synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)
IT Polymer blends
(synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)
IT 112-35-6, Triethyleneglycol monomethylether 9004-74-4, Poly(ethylene glycol) monomethylether

(monomer precursor; synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)

IT **211689-91-7P**
(synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether))

IT 33454-82-9, Lithium triflate
(synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)

IT 9003-11-6, Ethylene oxide-propylene oxide copolymer 25322-68-3, Polyethylene oxide
(synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)

IT **211689-88-2P** 313473-78-8P 313473-79-9P 313473-80-2P 313473-81-3P
(synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)

IT 16853-85-3, Lithium aluminum hydride
(synthesis and characterization of aluminate **polymer electrolytes** and their blends with poly(ether)s)

Similar, better date

L28 ANSWER 6 OF 7 HCA COPYRIGHT 2004 ACS on STN
129:189749 New inorganic-organic hybrid Li+ ion **conducting polymer electrolytes**. Fujinami, Tatsuo; Sugie, Kazuhiro; Mori, Kenji; Mehta, Mary Anne (Department of Materials Science, Faculty of Engineering, Shizuoka University, Hamamatsu, 432-8561, Japan). Chemistry Letters (7), 619-620 (English) 1998. CODEN: CMLTAG. ISSN: 0366-7022. Publisher: Chemical Society of Japan.

AB A new series of inorg.-org. hybrid **polymer electrolytes** contg. the aluminate structure was prepd. Incorporation of stronger Lewis acid sites into the polymer in the region of the aluminate bond was effective for enhancing ionic cond. The materials were shown to be single Li+ ion conductors.

IT **211689-88-2P 211689-91-7P 211689-93-9P 211689-98-4P**
(prepn. and ionic cond. of)

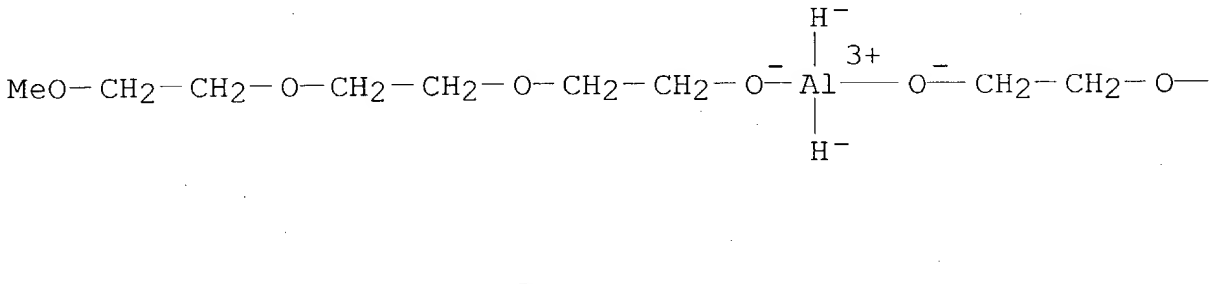
RN 211689-88-2 HCA

CN Aluminate(1-), dihydrobis[2-[2-(2-methoxyethoxy)ethoxy]ethanolato-κO]-, (T-4)-, lithium, polymer with phenylboronic acid (9CI) (CA INDEX NAME)

CM 1

CRN 211689-86-0
CMF C14 H32 Al O8 . Li
CCI CCS

PAGE 1-A

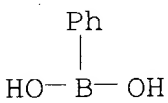


PAGE 1-B

— CH_2— CH_2— O— CH_2— CH_2— OMe

CM 2

CRN 98-80-6
CMF C6 H7 B O2

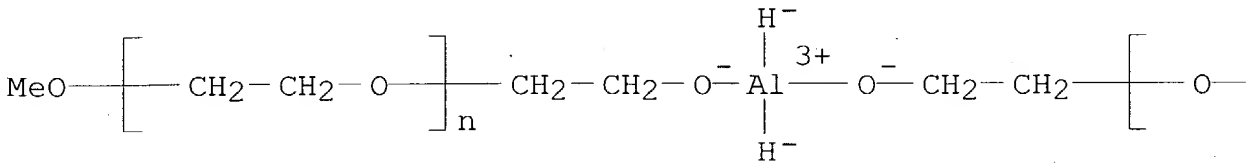


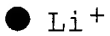
RN 211689-91-7 HCA
CN Boronic acid, phenyl-, polymer with α-hydro-ω-methoxypoly(oxy-1,2-ethanediyl) ether with lithium (T-4)-dihydrodihydroxyaluminate(1-) (2:1) (9CI) (CA INDEX NAME)

CM 1

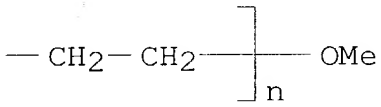
CRN 211689-89-3
CMF (C2 H4 O)n (C2 H4 O)n C6 H16 Al O4 . Li
CCI CCS, PMS

PAGE 1-A



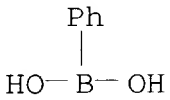


PAGE 1-B



CM 2

CRN 98-80-6
CMF C6 H7 B O2

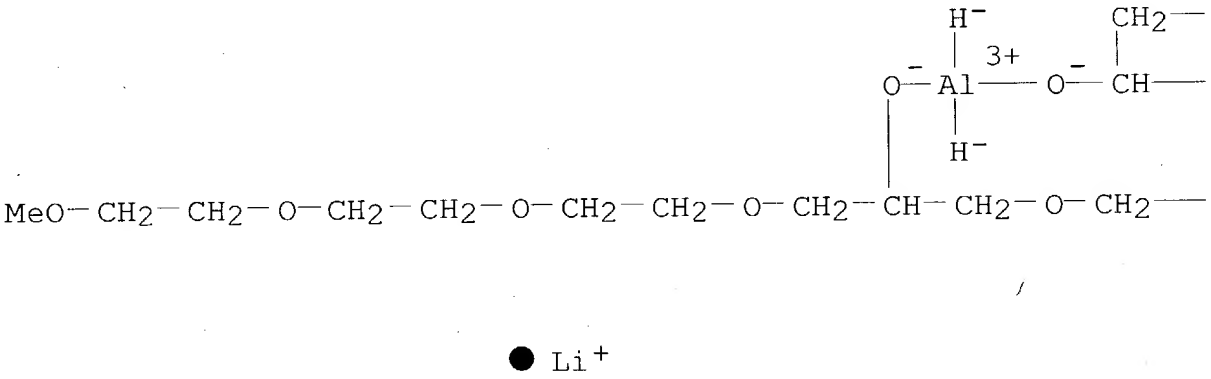


RN 211689-93-9 HCA
CN Aluminate(1-), dihydrobis(2,5,8,11,15,18,21,24-octaoxapentacosan-13-olato-κO13)-, (T-4)-, lithium, polymer with phenylboronic acid (9CI) (CA INDEX NAME)

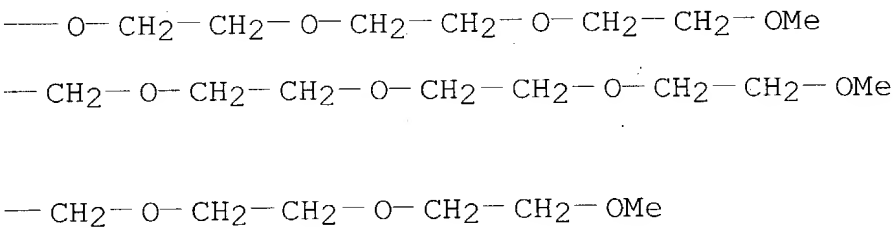
CM 1

CRN 211689-92-8
CMF C34 H72 Al O18 . Li
CCI CCS

PAGE 1-A

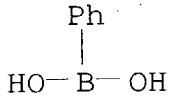


PAGE 1-B



CM 2

CRN 98-80-6
CMF C6 H7 B O2

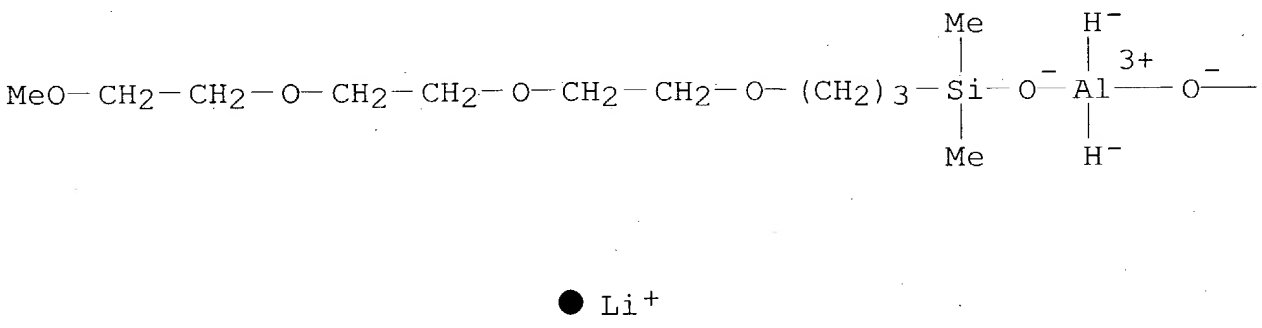


RN 211689-98-4 HCA
CN Aluminate(1-), dihydrobis(15-methyl-2,5,8,11-tetraoxa-15-silahexadecan-15-olato-κO15)-, (T-4)-, lithium, polymer with phenylboronic acid (9CI) (CA INDEX NAME)

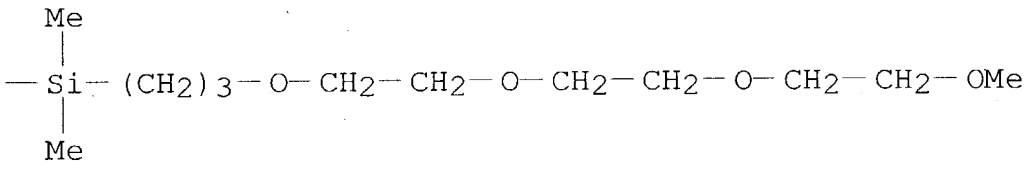
CM 1

CRN 211689-95-1
CMF C24 H56 Al O10 Si2 . Li
CCI CCS

PAGE 1-A

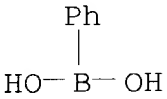


PAGE 1-B



CM 2

CRN 98-80-6
CMF C6 H7 B O2



CC 35-6 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 38, 76

ST aluminate contg ion **conducting polymer electrolyte**; lithium ion **conductor** aluminate contg **polymer**

IT Ionic conductivity
(of inorg.-org. hybrid Li+ ion **conducting polymer electrolytes**)

IT **Polymer electrolytes**
(prepn. and ionic cond. of inorg.-org. hybrid Li+ ion **conducting polymer electrolytes**)

IT 211689-87-1P **211689-88-2P** 211689-90-6P

211689-91-7P 211689-93-9P 211689-96-2P
211689-98-4P
(prepn. and ionic cond. of)

=> d l29 1-26 cbib abs hitstr hitind

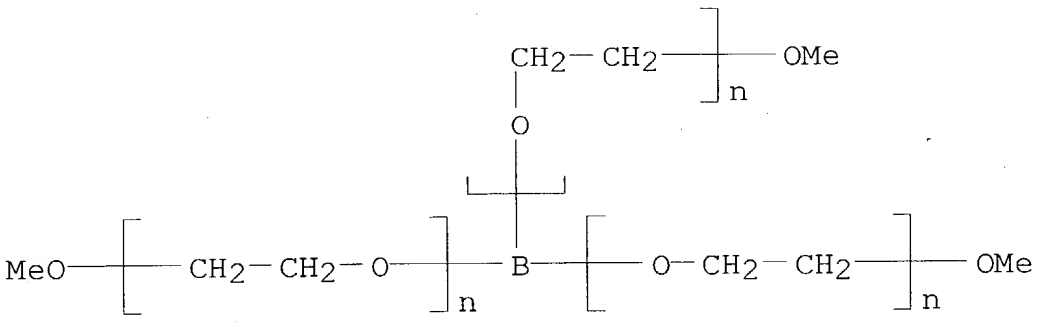
L29 ANSWER 1 OF 26 HCA COPYRIGHT 2004 ACS on STN B.D.
140:44681 Preparation of novel solid **polymer electrolytes** containing Group 13/III metal alkoxides as Lewis acids. Hasumi, Kohji; Ikuta, Hiromasa; Uchimoto, Yoshiharu; Wakihara, Masataka (Department of Applied Chemistry, Graduate School of Science and Engineering, Tokyo Institute of Technology, Meguro-ku, Tokyo, 152-8552, Japan). Electrochemistry (Tokyo, Japan), 71(12), 1028-1029 (English) 2003. CODEN: EECTFA. ISSN: 1344-3542. Publisher: Electrochemical Society of Japan.

AB Novel solid **polymer electrolytes** contg. Group 13/III metal alkoxides having Lewis acidity were synthesized by hybridization of the polymer from methoxy poly(ethylene glycol) monomethacrylate with B((OC2H4)12OCH3)3 or Al(OEt)3 or Ga(OEt)3, and LiCl. The resulting solid **polymer electrolyte** contg. Ga(OEt)3 exhibited a cond. about 10 times that of the alkoxide-free electrolyte.

IT **75915-45-6**
(solid **polymer electrolytes** contg. boron, aluminum or gallium alkoxides as Lewis acids for lithium batteries)

RN 75915-45-6 HCA

CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-methoxy- (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST methoxy ethylene glycol metal alkoxide **polymer electrolyte** lithium battery

IT Battery **electrolytes**
(solid **polymer electrolytes** contg. boron,

aluminum or gallium alkoxides as Lewis acids for lithium batteries)

IT 7439-93-2D, Lithium, methoxy polyethylene glycol methacrylate complexes 7447-41-8, Lithium chloride, uses 26915-72-0D, PME400, lithium complexes
(**electrolyte**; solid **polymer electrolytes** contg. boron, aluminum or gallium alkoxides as Lewis acids for lithium batteries with)

IT 555-75-9, Aluminum ethoxide 2572-25-0, Gallium ethoxide **75915-45-6**
(solid **polymer electrolytes** contg. boron, aluminum or gallium alkoxides as Lewis acids for lithium batteries)

B.D.

L29 ANSWER 2 OF 26 HCA COPYRIGHT 2004 ACS on STN
139:396366 Interaction between the Lewis Acid Group of a Borate Ester and Various Anion Species in a **Polymer Electrolyte** Containing Mg Salt. Saito, Morihiro; Ikuta, Hiromasa; Uchimoto, Yoshiharu; Wakihara, Masataka; Yokoyama, Shoichi; Yabe, Takeshi; Yamamoto, Masahiro (Department of Applied Chemistry, Graduate School of Science and Engineering, Tokyo Institute of Technology, Meguro, Tokyo, 152-8552, Japan). Journal of Physical Chemistry B, 107(42), 11608-11614 (English) 2003. CODEN: JPCBFK. ISSN: 1520-6106. Publisher: American Chemical Society.

AB To clarify the interaction between a Lewis acid and anionic species of the supporting salt incorporated in a **polymer electrolyte**, we designed a novel solid **polymer electrolyte** based on Mg salt complexes of poly(ethylene glycol) (PEO) chains cross-linked by a borate ester group as a Lewis acid and examd. the ionic conduction mechanism of the electrolyte. Mg(ClO4)2, Mg(CF3SO3)2, and Mg[(CF3SO2)2N]2 were used as the Mg salt. To change the concn. of the Lewis acid in the **polymer electrolyte**, two different lengths of PEG chains, which were cross-linked by borate ester group, were used. By estg. the transport no. of the Mg2+ cation (t2+Mg) of the electrolytes, the borate ester group interacts with anions with the consequence that t2+Mg increases with increasing concn. of borate ester group. By measuring Raman spectra for the electrolyte contg. Mg(ClO4)2 salt, the concn. of the free ClO-4 anion increased with the increasing concn. of the borate ester group in the **polymer electrolyte**, which implied that the relative proportion of free Mg2+ carrier ion also increased. The order of the t2+Mg value was Mg(ClO4)2 > Mg(CF3SO3)2 » Mg[(CF3SO2)2N]2. The change in the total energy due to the interaction between the PEG-borate ester and each anion species using ab initio calcn. is in good agreement with the results of the t2+Mg and Raman spectra. The borate ester group as a Lewis acid interacts with hard anions of ClO-4 or CF3SO-3 more strongly than the soft anion of (CF3SO2)2N- to enhance the

degree of dissocn. of the salt and trap the anion in the **polymer electrolyte.**

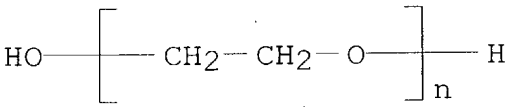
IT **39434-94-1DP,** magnesium complexes
(interaction between the Lewis acid group of a borate ester and various anion species in a poly(ethylene glycol) **polymer electrolyte** contg. Mg salt)

RN 39434-94-1 HCA

CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

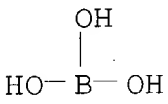
CM 1

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 2

CRN 10043-35-3
CMF B H3 O3



CC 36-5 (Physical Properties of Synthetic High Polymers)
Section cross-reference(s): 76

ST polyethylene glycol borate ester **polymer electrolyte** interaction magnesium salt

IT Electronegativity
Glass transition temperature
Hardness (electronic structure)
Ionic conductivity
Polymer electrolytes
Transference number
(interaction between the Lewis acid group of a borate ester and various anion species in a poly(ethylene glycol) **polymer electrolyte** contg. Mg salt)

IT Polyoxyalkylenes, properties
(interaction between the Lewis acid group of a borate ester and various anion species in a poly(ethylene glycol) **polymer**

electrolyte contg. Mg salt)

IT Molecular structure
(optimized; of poly(ethylene glycol) **polymer electrolyte** model compd. and interaction of Lewis acid group of a borate ester and various anion species)

IT 14797-73-0, Perchlorate 37181-39-8, Trifluoromethanesulfonate 98837-98-0
(interaction between the Lewis acid group of a borate ester and various anion species in a poly(ethylene glycol) **polymer electrolyte** contg. Mg salt)

IT 7439-95-4DP, Magnesium, polyethylene glycol ester with boric acid complexes **39434-94-1DP**, magnesium complexes
(interaction between the Lewis acid group of a borate ester and various anion species in a poly(ethylene glycol) **polymer electrolyte** contg. Mg salt)

IT 115-10-6, Dimethyl ether
(mol. structure, complex with di-Me ether; interaction between the Lewis acid group of a borate ester and various anion species in a poly(ethylene glycol) **polymer electrolyte** contg. Mg salt)

IT 14983-42-7
(mol. structure, model compd., complex with di-Me ether; interaction between the Lewis acid group of a borate ester and various anion species in a poly(ethylene glycol) **polymer electrolyte** contg. Mg salt)

IT 10034-81-8P, Magnesium perchlorate (Mg(ClO4)2) 60871-83-2P, Magnesium trifluoromethanesulfonate 133395-16-1P
(polyethylene glycol ester with boric acid complexes; interaction between the Lewis acid group of a borate ester and various anion species in a poly(ethylene glycol) **polymer electrolyte** contg. Mg salt)

B.O.

L29 ANSWER 3 OF 26 HCA COPYRIGHT 2004 ACS on STN
139:365345 Anion-trapping and polyanion electrolytes based on acid-in-chain borate polymers. Xu, Wu; Sun, Xiao-Guang; Angell, C. Austen (Department of Chemistry and Biochemistry, Arizona State University, Tempe, AZ, 85287-1604, USA). Electrochimica Acta, 48(14-16), 2255-2266 (English) 2003. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..

AB Oligoether branched-and-spaced acid-in-chain polymers with variable length side chains attached to acidic boron were prepd. by a simple two-step reaction sequence. First, poly(ethylene glycol)monomethyl ether (or poly(propylene glycol)monobutyl ether) reacted with boric acid, then poly(ethylene glycol) or poly(propylene glycol) was added to obtain the acid-in chain borate polyethers; a quant. amt. of Li salt was added to the polymer in anhyd. THF soln. to obtain the corresponding salt complexes. The salts include LiTFSI, LiSO3CF3, LiBOB (BOB = bis(oxalato)borate), LiSCN, NaCN, LiCN, LiOCH3,

LiO-CH2CF3, and Li2S. The acid-in-chain borate polyethers act as anion-retarding hosts, suitable for salt-in-**polymer electrolytes** or, alternatively, may be converted to polyanionic electrolytes by reacting with strong Lewis base anions. The anion hosts have ionic cond. of 7.6 + 10-5 S cm-1 at 25° for the LiTFSI compd. with LiTFSI:B ratio of 1:1, and optimized side chain and spacer length. The electrochem. window of this **polymer electrolyte** is wide enough (>4.5 V) for most applications.

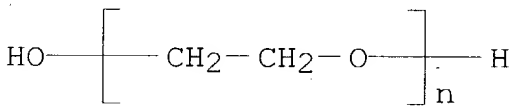
IT **229966-82-9P**, Boric acid-polyethylene glycol **copolymer 620944-23-2P**
(prepn. and **cond.** and VFT parameters of anion-trapping and polyanion electrolytes based on acid-in-chain borate polyether-lithium salt complexes)

RN 229966-82-9 HCA

CN Boric acid (H3BO3), polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

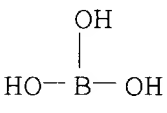
CM 1

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 2

CRN 10043-35-3
CMF B H3 O3



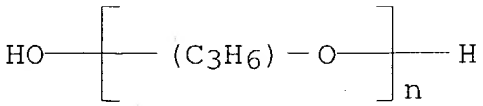
RN 620944-23-2 HCA

CN Boric acid (H3BO3), polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) and α-hydro-ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)] (9CI) (CA INDEX NAME)

CM 1

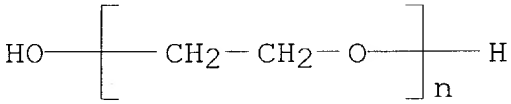
CRN 25322-69-4

CMF (C3 H6 O)n H2 O
CCI IDS, PMS



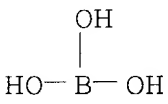
CM 2

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 3

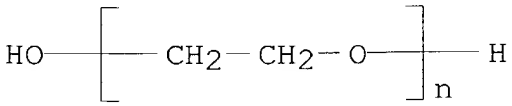
CRN 10043-35-3
CMF B H3 O3



IT **229966-82-9DP**, Boric acid-polyethylene glycol copolymer, lithium and sodium complexes **620944-23-2DP**, lithium and sodium complexes
(prepn. and **cond.** and VFT parameters of anion-trapping and polyanion electrolytes based on acid-in-chain borate polyether-lithium salt complexes)
RN 229966-82-9 HCA
CN Boric acid (H3BO3), polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

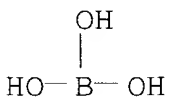
CM 1

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 2

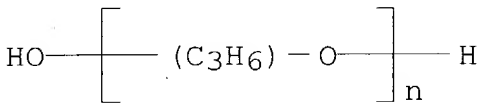
CRN 10043-35-3
CMF B H3 O3



RN 620944-23-2 HCA
CN Boric acid (H3BO3), polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) and α-hydro-ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)] (9CI) (CA INDEX NAME)

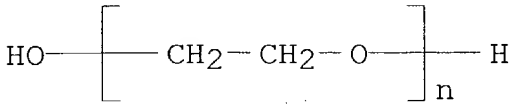
CM 1

CRN 25322-69-4
CMF (C3 H6 O)n H2 O
CCI IDS, PMS



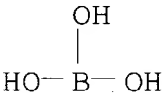
CM 2

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 3

CRN 10043-35-3
CMF B H3 O3



CC 35-7 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 29, 36, 72, 76
ST polyether borate prepn anion host lithium salt **polymer electrolyte**; anion trap boron acidic group polyoxyethylene ionic cond; polyanion electrolyte boron acid group polyether chain lithium salt
IT **Polymer electrolytes**
(polyanion-borate; prepn. and cond. and VFT parameters of anion-trapping and polyanion electrolytes based on acid-in-chain borate polyether-lithium salt complexes)
IT **229966-82-9P**, Boric acid-polyethylene glycol **copolymer 620944-23-2P**
(prepn. and **cond.** and VFT parameters of anion-trapping and polyanion electrolytes based on acid-in-chain borate polyether-lithium salt complexes)
IT 7439-93-2DP, Lithium, complexes with boric acid-polyoxyalkylene **copolymers** 7440-23-5DP, Sodium, complexes with boric acid-polyoxyalkylene **copolymers 229966-82-9DP**, Boric acid-polyethylene glycol copolymer, lithium and sodium complexes **620944-23-2DP**, lithium and sodium complexes
(prepn. and **cond.** and VFT parameters of anion-trapping and polyanion electrolytes based on acid-in-chain borate polyether-lithium salt complexes)

L29 ANSWER 4 OF 26 HCA COPYRIGHT 2004 ACS on STN B.D.
139:365301 Synthesis of a Lewis-acidic boric acid ester monomer and effect of its addition to **electrolyte** solutions and **polymer** gel **electrolytes** on their ion transport properties. Tabata, Sei-ichiro; Hirakimoto, Takuro; Nishiura, Masahito; Watanabe, Masayoshi (Department of Chemistry and Biotechnology, Yokohama National University, Hodogaya-ku, Yokohama, 240-8501, Japan). Electrochimica Acta, 48(14-16), 2105-2112 (English) 2003. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..
AB A polymerizable anion receptor based on a boric acid naphthalene tetraethylene glycol monoacrylate ester was synthesized. When the anion receptor was added to electrolyte solns. consisting of an aprotic solvent and a lithium salt, the ionic cond. of solns. of solvents with low polarity or salts with low dissocn. was enhanced appreciably. The salts studied include LiF, LiCl, CF3COOLi,

CF3SO3Li, LiBF4, and LiTFSI. Viscosity measurements of electrolyte solns., with and without anion receptor, indicated that the cond. enhancement was caused by an increase in the ionic dissocn. Pulse-field-gradient spin-echo (PGSE) NMR and 11B-NMR spectra indicate that ionic dissocn. was facilitated by interaction between the Lewis-acidic anion receptor and Lewis-basic anions. The polymerizable anion receptor was used as monomer in crosslinking with ethylene oxide-propylene oxide copolymer glycerol ether triacrylate macromonomer in different electrolyte solns. The ionic cond. of the resulting **polymer** gel **electrolytes** change in similar manner as that of solns. contg. the anion receptor monomer.

IT **622374-52-1P**
(gel electrolyte; prepn. of Lewis-acidic naphthalenediol borate acrylate monomer and enhanced ionic cond. of Li salt **electrolyte** solns. and **copolymer** gel **electrolytes**)

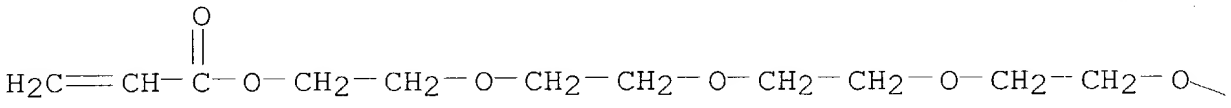
RN 622374-52-1 HCA

CN 2-Propenoic acid, 2-[2-[2-[2-(naphtho[2,3-d]-1,3,2-dioxaborol-2-yloxy)ethoxy]ethoxy]ethoxy]ethyl ester, polymer with methyloxirane polymer with oxirane ether with 1,2,3-propanetriol (3:1) tri-2-propenoate (9CI) (CA INDEX NAME)

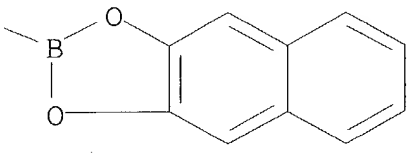
CM 1

CRN 620950-25-6
CMF C21 H25 B O8

PAGE 1-A



PAGE 1-B

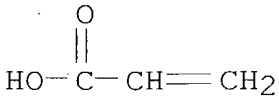


CM 2

CRN 111804-95-6
CMF C3 H8 O3 . 3 (C3 H6 O . C2 H4 O)x . 3 C3 H4 O2

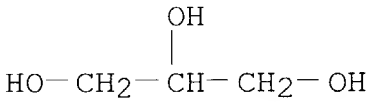
CM 3

CRN 79-10-7
CMF C3 H4 O2



CM 4

CRN 56-81-5
CMF C3 H8 O3

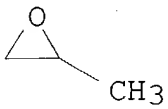


CM 5

CRN 9003-11-6
CMF (C3 H6 O . C2 H4 O)x
CCI PMS

CM 6

CRN 75-56-9
CMF C3 H6 O



CM 7

CRN 75-21-8
CMF C2 H4 O

CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 36, 72, 76

ST naphthalenediol borate glycol acrylate monomer prepn Lewis acidity; electrolyte soln lithium salt ionic cond naphthalenediol borate; **polymer** gel **electrolyte** acrylate crosslinking borate Lewis acid; ionic cond gel polyacrylate naphthalenediol borate lithium salt

IT Ionic conductivity
Transference number
(anionic and cationic; prepn. of Lewis-acidic naphthalenediol borate acrylate monomer and enhanced ionic cond. of Li salt **electrolyte** solns. and **copolymer** gel **electrolytes**)

IT NMR (nuclear magnetic resonance)
(boron-11; prepn. of Lewis-acidic naphthalenediol borate acrylate monomer and enhanced ionic cond. of Li salt **electrolyte** solns. and **copolymer** gel **electrolytes**)

IT **Polymer electrolytes**
(gel; prepn. of Lewis-acidic naphthalenediol borate acrylate monomer and enhanced ionic cond. of Li salt **electrolyte** solns. and **copolymer** gel **electrolytes**)

IT Crosslinking
Dissociative ionization
Electrolytes
Lewis acidity
Viscosity
(prepn. of Lewis-acidic naphthalenediol borate acrylate monomer and enhanced ionic cond. of Li salt **electrolyte** solns. and **copolymer** gel **electrolytes**)

IT 96-48-0, γ-Butyrolactone 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 616-38-6, Dimethyl carbonate 2923-17-3, Lithium trifluoroacetate 7447-41-8, Lithium chloride (LiCl), properties 7789-24-4, Lithium fluoride (LiF), properties 14283-07-9 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide
(electrolyte soln. component; prepn. of Lewis-acidic naphthalenediol borate acrylate monomer and enhanced ionic cond. of Li salt **electrolyte** solns. and **copolymer** gel **electrolytes**)

IT 406720-90-9P **622374-52-1P**
(gel electrolyte; prepn. of Lewis-acidic naphthalenediol borate acrylate monomer and enhanced ionic cond. of Li salt **electrolyte** solns. and **copolymer** gel

electrolytes)

IT 620950-25-6P
(monomer; prepn. of Lewis-acidic naphthalenediol borate acrylate monomer and enhanced ionic cond. of Li salt **electrolyte** solns. and **copolymer** gel **electrolytes**)

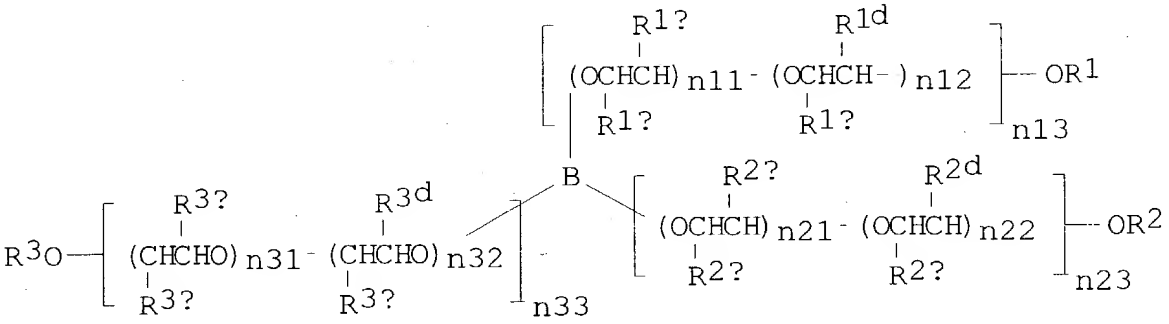
IT 48067-72-7P, Triethylene glycol monomethyl ether acrylate
(monomer; prepn. of Lewis-acidic naphthalenediol borate acrylate monomer and enhanced ionic cond. of Li salt **electrolyte** solns. and **copolymer** gel **electrolytes**)

IT 79-10-7, Acrylic acid, reactions 92-44-4, 2,3-Naphthalenediol 112-35-6, Triethylene glycol monomethyl ether 121-43-7, Trimethoxyborane 19812-60-3, Tetraethylene glycol monoacrylate
(prepn. of Lewis-acidic naphthalenediol borate acrylate monomer and enhanced ionic cond. of Li salt **electrolyte** solns. and **copolymer** gel **electrolytes**)

L29 ANSWER 5 OF 26 HCA COPYRIGHT 2004 ACS on STN

139:232985 **Polymer** solid **electrolyte** and **polymer** solid **electrolyte** battery. Bando, Toshinori; Kuratomi, Junichi; Ono, Tetsuo (Yuasa Corporation, Japan). Jpn. Kokai Tokkyo Koho JP 2003249266 A2 20030905, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-48481 20020225.

GI



I

AB The electrolyte contains an electrolyte salt and a polymer; where the polymer has repeating structure units derived from a compd. I [R1 = C>1 nonpolymerizable functional group; R2, R3 = polymerizable functional group; R1a, R1b, R1c, R1d, R2a, R2b, R2c, R2d, R3a, R3b, R3c, R3d = H or C1-3 alkyl group; n11, n12, n13, n21, n22, n23, n31, n32, n33 = integer 0-100; (n21 + n22 + n23) .++. 0; (n31 + n32 + n33) .++. 0; n13(n11+n12)> n23(n21+n22)> n33(n31+n32)]. The battery has the above electrolyte, a cathode

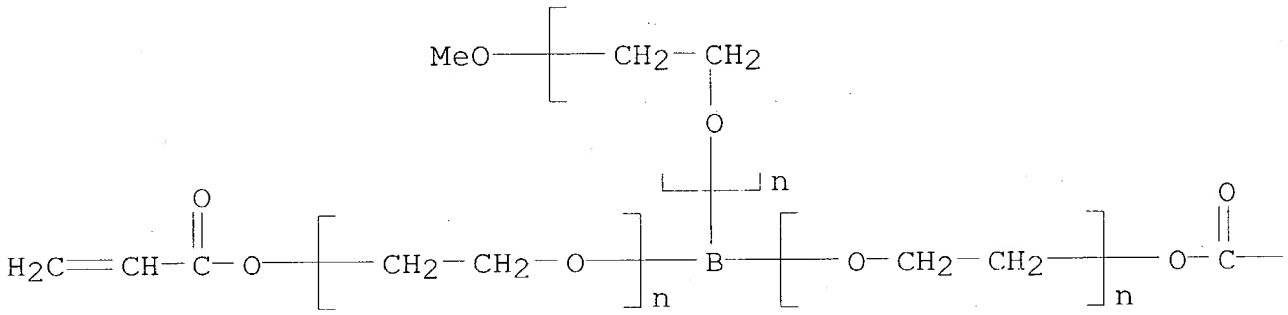
contg. a transition metal oxide based active mass and an anode contg. a Li alloy, Li, or Li-intercalating substance based anode material.

IT **512206-28-9**
(solid electrolytes contg. **electrolyte** salts and **polymers** for secondary lithium batteries)

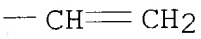
RN 512206-28-9 HCA

CN Poly(oxy-1,2-ethanediyl), ω-methoxy-ω',ω''-bis[(1-oxo-2-propenyl)oxy]-α,α',α''-borylidynetris- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM H01M010-40
ICS C08G065-28; C08G065-332; H01B001-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery solid **electrolyte polymer** compn

IT Secondary batteries
(lithium; solid electrolytes contg. **electrolyte** salts and **polymers** for secondary lithium batteries)

IT Battery electrolytes
Polymer electrolytes
(solid **electrolytes** contg. **electrolyte** salts

and **polymers** for secondary lithium batteries)

IT 7782-42-5, Graphite, uses
(anode; solid electrolytes contg. **electrolyte** salts and **polymers** for secondary lithium batteries)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2)
(cathode; solid electrolytes contg. **electrolyte** salts and **polymers** for secondary lithium batteries)

IT 90076-65-6 **512206-28-9**
(solid electrolytes contg. **electrolyte** salts and **polymers** for secondary lithium batteries)

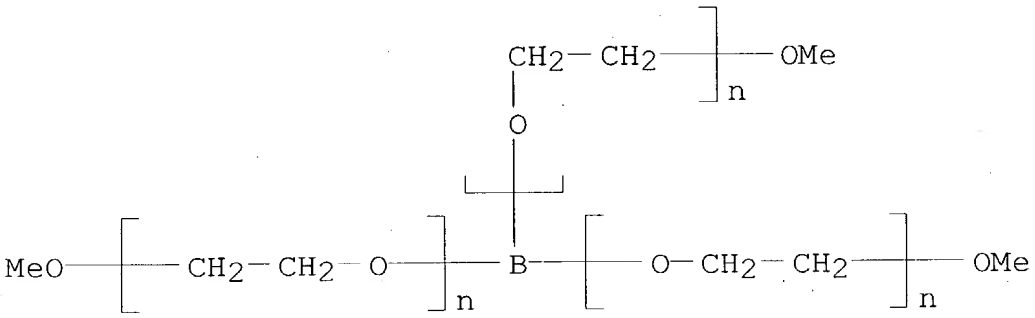
L29 ANSWER 6 OF 26 HCA COPYRIGHT 2004 ACS on STN

139:53634 Influence of PEG-Borate Ester as a Lewis Acid on Ionic **Conductivity** of **Polymer Electrolyte** Containing Mg-Salt. Saito, Morihiro; Ikuta, Hiromasa; Uchimoto, Yoshiharu; Wakihara, Masataka; Yokoyama, Shoichi; Yabe, Takeshi; Yamamoto, Masahiro (Graduate School of Science and Engineering, Department of Applied Chemistry, Tokyo Institute of Technology, Meguro-ku, Tokyo, 152-8552, Japan). Journal of the Electrochemical Society, 150(4), A477-A483 (English) 2003. CODEN: JESOAN. ISSN: 0013-4651. Publisher: Electrochemical Society.

AB A novel Mg2+ **conducting polymer electrolyte** was prepd. and added with a poly(ethylene glycol) (PEG)-borate ester as a new type plasticizer having a Lewis acidity and the influence of the Lewis acidity of the PEG-borate ester to a solid **polymer electrolyte** contg. Mg(ClO4)2 salt was investigated. Adding the PEG-borate ester into the electrolyte shows the increase in the ionic **cond.** of the **polymer electrolyte.** By measuring the glass transition temp. (Tg) of the **polymer electrolytes** using differential scanning calorimetry, it became clear that the mobility of the carrier ion increases with increasing the amt. of the PEG-borate ester. By investigating the temp. dependence of the ionic cond. using William-Landel-Ferry type equation and measuring Raman spectra of the **polymer electrolytes,** it was found that the concn. of the carrier ion increases with increasing the amt. of the PEG-borate ester in the **polymer electrolyte.** Furthermore, by estg. the transference no. of the Mg2+ cation and performing the ab initio calcn. for the PEG-borate ester, it is suggested that the PEG-borate ester may enhance the degree of dissocn. of the Mg salt in the **polymer electrolyte** to increase the ratio of the free ion, esp. Mg2+, by interacting with and trapping the ClO4- anion of the salt as a Lewis acid.

IT **75915-45-6**
(plasticizer; influence of polyethylene glycol-borate ester as Lewis acid on ionic cond. of poly(ethylene glycol) methacrylate **polymer electrolyte** contg. Mg-salt)

RN 75915-45-6 HCA
CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-methoxy- (9CI) (CA INDEX NAME)



CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 76
ST polyethylene glycol borate plasticizer magnesium **polymer electrolyte cond**
IT Energy
Glass transition temperature
Ionic conductivity
Plasticizers
Polymer electrolytes
Transference number
(influence of polyethylene glycol-borate ester as Lewis acid on ionic cond. of poly(ethylene glycol) methacrylate **polymer electrolyte** contg. Mg-salt)
IT 7439-95-4DP, Magnesium, poly(ethylene glycol) dimethacrylate-poly(ethylene glycol) Me ether methacrylate copolymer complexes, perchlorate-contg. 108927-94-2DP, magnesium complexes, perchlorate-contg.
(influence of polyethylene glycol-borate ester as Lewis acid on ionic cond. of poly(ethylene glycol) methacrylate **polymer electrolyte** contg. Mg-salt)
IT 10034-81-8, Magnesium perchlorate
(influence of polyethylene glycol-borate ester as Lewis acid on ionic cond. of poly(ethylene glycol) methacrylate **polymer electrolyte** contg. Mg-salt)
IT **75915-45-6**
(plasticizer; influence of polyethylene glycol-borate ester as Lewis acid on ionic cond. of poly(ethylene glycol) methacrylate **polymer electrolyte** contg. Mg-salt)

L29 ANSWER 7 OF 26 HCA COPYRIGHT 2004 ACS on STN B.D.
138:321844 Influence of Lewis acidic borate ester groups on lithium ionic **conduction** in **polymer electrolytes**
Kato, Yuki; Suwa, Kentaro; Ikuta, Hiromasa; Uchimoto, Yoshiharu;

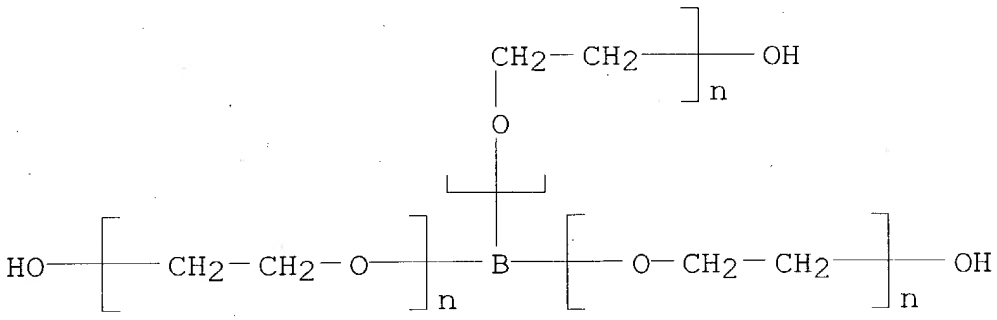
Wakihara, Masataka; Yokoyama, Shoichi; Yabe, Takeshi; Yamamoto, Masahiro (Department of Applied Chemistry, Graduate School of Science and Engineering, Tokyo Institute of Technology, Tokyo, 152-8552, Japan). Journal of Materials Chemistry, 13(2), 280-285 (English) 2003. CODEN: JMACEP. ISSN: 0959-9428. Publisher: Royal Society of Chemistry.

AB **Polymer electrolytes** having borate ester groups, which are part of the polymer matrix, have been prepd. The transference no. of the lithium ions increases with increasing concn. of the borate ester groups, and therefore it is considered that the borate ester groups, having Lewis acidity, interact with Lewis basic anions. Furthermore, the transference nos. of lithium ions in the **polymer electrolytes** contg. LiCF3SO3 or LiClO4 were found to be higher than that in the electrolyte with Li N(CF3SO2)2. Ab initio calcns. were performed to est. the interactions between the borate ester groups and the anions. The calcd. results indicate that the borate ester group prefers to interact with a hard' basic anion, CF3SO3- or ClO4-. This is in good agreement with the obtained exptl. results.

IT **64631-20-5P**, Polyethylene glycol boric acid ester
(lithium ionic **conduction** in **polymer electrolytes**)

RN 64631-20-5 HCA

CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-hydroxy- (9CI) (CA INDEX NAME)



CC 36-5 (Physical Properties of Synthetic High Polymers)
Section cross-reference(s): 72

IT LUMO (molecular orbital)
(HOMO gap; lithium ionic **conduction** in **polymer electrolytes**)

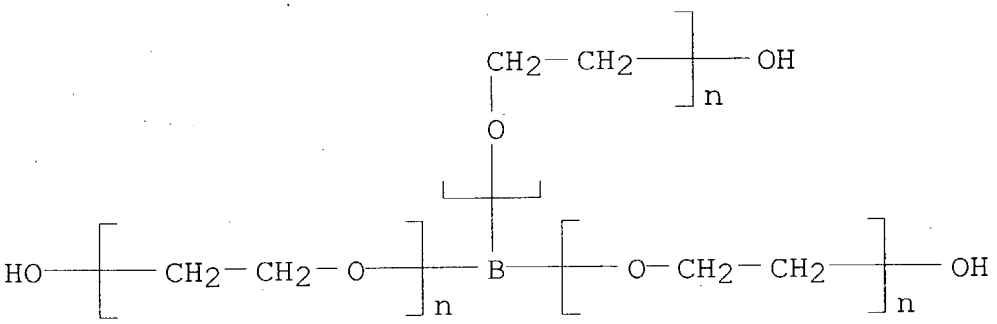
IT HOMO (molecular orbital)
(LUMO gap; lithium ionic **conduction** in **polymer electrolytes**)

IT Dissociation
(degree; lithium ionic **conduction** in **polymer electrolytes**)

IT Polymer chains
(dynamics; lithium ionic **conduction** in **polymer electrolytes**)
IT Electron affinity
Hardness (electronic structure)
Ionic conductivity
Ionization potential
Lewis acidity
Polymer electrolytes
Thermal stability
Transference number
(lithium ionic **conduction** in **polymer electrolytes**)
IT Electrolytes
(supporting; lithium ionic **conduction** in **polymer electrolytes**)
IT **64631-20-5P**, Polyethylene glycol boric acid ester
(lithium ionic **conduction** in **polymer electrolytes**)
IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium triflate 90076-65-6, LiTFSI
(supporting electrolyte; lithium ionic **conduction** in **polymer electrolytes**)

L29 ANSWER 8 OF 26 HCA COPYRIGHT 2004 ACS on STN B.D.
138:290328 Thermally stable solid **polymer electrolyte** containing borate ester groups for lithium secondary battery. Kato, Yuki; Suwa, Kentaro; Yokoyama, Shoichi; Yabe, Takeshi; Ikuta, Hiromasa; Uchimoto, Yoshiharu; Wakihara, Masataka (Department of Applied Chemistry, Tokyo Institute of Technology, Graduate School of Science and Engineering, Meguro-ku, Tokyo, 152-8552, Japan). Solid State Ionics, 152-153, 155-159 (English) 2002. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier Science B.V..
AB A novel **polymer electrolyte** having borate ester groups, which are fixed to the backbone chain of the polymer, was prepd. The backbone polymer was synthesized by reaction between polyethylene glycol and boric acid anhydride. The highest cond. was found for the **polymer electrolyte** sample prepd. by the polyethylene glycol having av. mol. wt. of 600 (PEG600), the values of the ionic cond. were 5.8 + 10-5 S cm-1 at 30° and 2.6 + 10-4 S cm-1 at 60°, resp. The solid **polymer electrolytes** have relatively high thermal stability and electrochem. stability.
IT **64631-20-5P**, Polyethylene glycol boric acid ester
(complexes with LiTFSI; thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)
RN 64631-20-5 HCA

CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-hydroxy- (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

ST thermally stable **polymer electrolyte** borate ester lithium secondary battery

IT Polyoxyalkylenes, reactions
(PEG 200, PEG 400, PEG 600, PEG 1000, PET 2000; thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)

IT Stability
(electrochem.; thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)

IT Secondary batteries
(lithium; thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)

IT Cyclic voltammetry
Electric current-potential relationship
(of PEO-boric acid ester polymer/salt complexes; thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)

IT Borates
(polyethylene glycol esters, complexes with LiTFSI; thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)

IT Crosslinking
(thermal stability enhanced by; thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)

IT Battery electrolytes
Ionic conductivity
Polymer electrolytes
Thermal stability
(thermally stable solid **polymer electrolyte**

contg. borate ester groups for lithium secondary battery)

IT 25322-68-3, 1,2-Ethanediol, homopolymer
(PEG 200, PEG 400, PEG 600, PEG 1000, PET 2000; thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)

IT **64631-20-5P**, Polyethylene glycol boric acid ester
(complexes with LiTFSI; thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)

IT 17341-24-1P, preparation 90076-65-6P, Lithium bis-trifluoromethanesulfonylimide
(complexes with polyethylene glycol boric acid esters; thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)

IT 111-46-6, Diethylene glycol, reactions 112-27-6, Triethylene glycol 1303-86-2, Boric acid anhydride, reactions
(thermally stable solid **polymer electrolyte** contg. borate ester groups for lithium secondary battery)

L29 ANSWER 9 OF 26 HCA COPYRIGHT 2004 ACS on STN

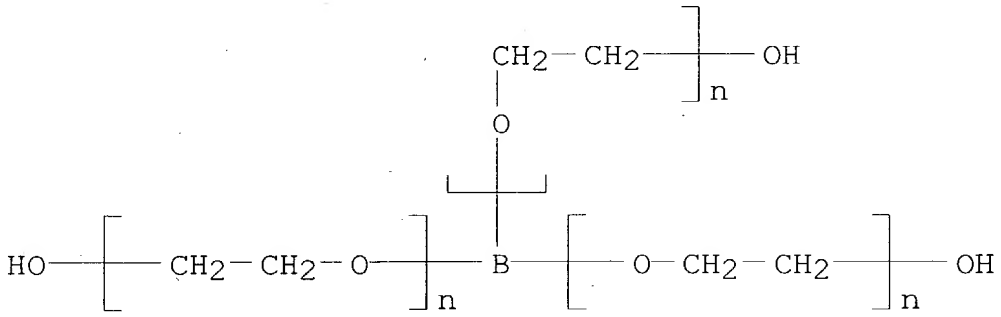
138:257903 **Polymer** solid **electrolyte** and its use in lithium battery. Bando, Toshinori; Kuratomi, Junichi; Ono, Tetsuo (Yuasa Corporation, Japan). Jpn. Kokai Tokkyo Koho JP 2003092138 A2 20030328, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-280936 20010917.

AB The electrolyte is made of ionic salt-contg. covalent bond-free polymer alloys contg. (1) polyethers with tridimensional network structures and (2) B- and polyether-contg. polymers, e.g., B[(OCH2CH2)nOMe]3. The electrolyte improves Li ion transport no. and gives the battery with high energy d., charge-discharge cycle performance, and safety without leakage.

IT **64631-20-5**
(semi-interpenetrating polymer networks; salt-contg. **polymer** alloy solid **electrolyte** for Li battery with high energy d. and cycle performance)

RN 64631-20-5 HCA

CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-hydroxy- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
ICS C08K003-00; C08K005-00; C08L071-00; C08L071-02; C08L075-04; H01B001-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST lithium battery polyether **polymer** alloy **electrolyte** safety; boron polyether **polymer** alloy solid **electrolyte**; polyether network structure **polymer** alloy solid **electrolyte**

IT Polyoxyalkylenes, uses
(acrylic, semi-interpenetrating polymer networks; salt-contg. **polymer** alloy solid **electrolyte** for Li battery with high energy d. and cycle performance)

IT Polyethers, uses
(boron-contg.; salt-contg. **polymer** alloy solid **electrolyte** for Li battery with high energy d. and cycle performance)

IT Secondary batteries
(lithium; salt-contg. **polymer** alloy solid **electrolyte** for Li battery with high energy d. and cycle performance)

IT Acrylic polymers, uses
(polyoxyalkylene-, semi-interpenetrating polymer networks; salt-contg. **polymer** alloy solid **electrolyte** for Li battery with high energy d. and cycle performance)

IT Battery **electrolytes**
Polymer electrolytes
(salt-contg. **polymer** alloy solid **electrolyte** for Li battery with high energy d. and cycle performance)

IT Interpenetrating polymer networks
(semi-interpenetrating; salt-contg. **polymer** alloy solid **electrolyte** for Li battery with high energy d. and cycle performance)

IT 90076-65-6, Lithium bis(trifluoromethylsulfonyl)amide
(salt-contg. **polymer** alloy solid **electrolyte** for Li battery with high energy d. and cycle performance)

IT 9003-11-6DP, Ethylene oxide-propylene oxide copolymer, triol derivs., triacrylates, polymers
(semi-interpenetrating polymer networks; salt-contg. **polymer** alloy solid **electrolyte** for Li battery with high energy d. and cycle performance)

IT **64631-20-5**
(semi-interpenetrating polymer networks; salt-contg. **polymer** alloy solid **electrolyte** for Li battery with high energy d. and cycle performance)

L29 ANSWER 10 OF 26 HCA COPYRIGHT 2004 ACS on STN

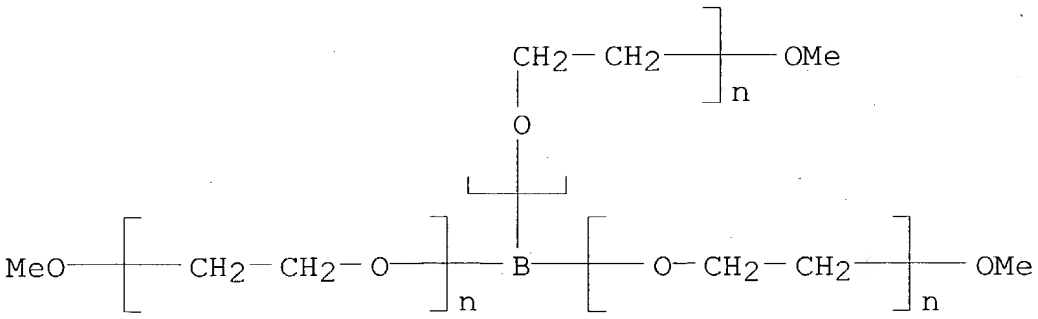
138:41935 Influence of PEG-borate ester on thermal property and ionic **conductivity** of the **polymer electrolyte**.
Kato, Y.; Hasumi, K.; Yokoyama, S.; Yabe, T.; Ikuta, H.; Uchimoto, Y.; Wakihara, M. (Graduate School of Science and Engineering, Department of Applied Chemistry, Tokyo Institute of Technology, Meguro-ku, Tokyo, 152-8552, Japan). Journal of Thermal Analysis and Calorimetry, 69(3), 889-896 (English) 2002. CODEN: JTACF7. ISSN: 1418-2874. Publisher: Kluwer Academic Publishers.

AB The use of poly(ethylene glycol) (PEG)-borate ester as a plasticizer for solid **polymer electrolytes** in lithium-ion batteries, was studied. Addn. of the PEG-borate ester to the electrolyte increases the ionic **cond.** of the **polymer electrolyte**. Measurement of the glass-transition temp. of the **polymer electrolyte** with DSC indicated that the increased ionic cond. is due to an increase in ionic mobility. A study of the temp. dependence of the ionic **cond.** of the **polymer electrolytes**, using the William-Landel-Ferry equation, indicated that the PEG-borate ester does not influence the dissocn. of the Li salt.

IT **75915-45-6**
(influence of PEG-borate ester plasticizer on glass transition temp. and ionic **cond.** of **polymer electrolyte** for batteries)

RN 75915-45-6 HCA

CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-methoxy- (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium ion battery polyethylene glycol borate ester **polymer electrolyte**; polyethylene glycol borate ester plasticizer **polymer electrolyte** property
IT Battery electrolytes
Glass transition temperature
Ionic conductivity
(influence of PEG-borate ester plasticizer on glass transition temp. and ionic **cond.** of **polymer electrolyte** for batteries)
IT Polyoxyalkylenes, uses
(influence of PEG-borate ester plasticizer on glass transition temp. and ionic **cond.** of **polymer electrolyte** for batteries)
IT 37281-56-4, Polyethylene glycol methacrylate-polyethylene glycol dimethacrylate **copolymer**
(crosslinked, **electrolyte**; influence of PEG-borate ester plasticizer on glass transition temp. and ionic **cond.** of **polymer electrolyte** for batteries)
IT **75915-45-6**
(influence of PEG-borate ester plasticizer on glass transition temp. and ionic **cond.** of **polymer electrolyte** for batteries)

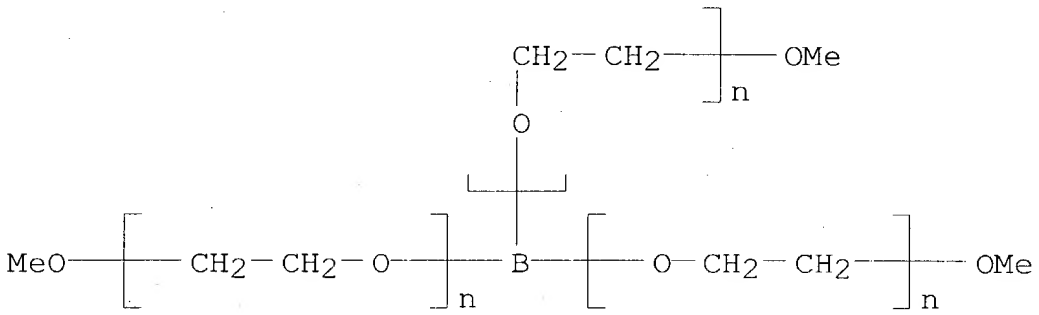
L29 ANSWER 11 OF 26 HCA COPYRIGHT 2004 ACS on STN B.D.
138:39929 **Polymer electrolyte** plasticized with PEG-borate ester having high ionic conductivity and thermal stability. Kato, Yuki; Hasumi, Kohji; Yokoyama, Shoichi; Yabe, Takeshi; Ikuta, Hiromasa; Uchimoto, Yoshiharu; Wakihara, Masataka (Graduate School of Science and Engineering, Department of Applied Chemistry, Tokyo Institute of Technology, Tokyo, Meguro, 152-8552, Japan). Solid State Ionics, 150(3,4), 355-361 (English) 2002. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier Science B.V..
AB We have focused on the PEG-borate ester as a new type of plasticizer for solid **polymer electrolyte** composed of poly(ethylene glycol) methacrylate (PEGMA) and lithium bis-trifluoromethanesulfonimide (LiTFSI). The PEG-borate ester shows good thermal stability and high flash point. Ionic **cond.** of the **polymer electrolyte** increases with increasing amt. of the PEG-borate ester and exhibits values greater than 10-4 S cm-1 at 30 °C and 10-3 S cm-1 at 60 °C. Furthermore, PEG-borate ester has three EO chains whose lengths are variable, and various ionic conductivities are expected to depend on EO chain length. As a result, **polymer electrolyte** contg. the PEG-borate ester whose EO chain

length is n=3 shows highest ionic cond. Furthermore, **polymer electrolytes** contg. PEG-borate esters show excellent thermal and electrochem. stability. The electrolytes are thermally stable up to 300 °C and electrochem. up to 4.5 V vs. Li+/Li.

IT **75915-45-6**
(plasticizer; plasticized polyether methacrylate/lithium **polymer electrolyte** with high ionic cond. and thermal stability)

RN 75915-45-6 HCA

CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-methoxy- (9CI) (CA INDEX NAME)



CC 37-5 (Plastics Manufacture and Processing)

ST polyethylene glycol borate plasticizer polyoxyalkylene lithium **polymer electrolyte**

IT Ionic conductivity
Polymer electrolytes
Thermal stability
(plasticized polyether methacrylate/lithium **polymer electrolyte** with high ionic cond. and thermal stability)

IT Plasticizers
(tris(polyethylene glycol) borate; plasticized polyether methacrylate/lithium **polymer electrolyte** with high ionic cond. and thermal stability)

IT 119471-21-5, Poly(ethylene glycol) methacrylate **homopolymer**
(**electrolyte** matrix; plasticized polyether methacrylate/lithium **polymer electrolyte** with high ionic cond. and thermal stability)

IT 90076-65-6, LiTFSI
(plasticized polyether methacrylate/lithium **polymer electrolyte** with high ionic cond. and thermal stability)

IT **75915-45-6**
(plasticizer; plasticized polyether methacrylate/lithium **polymer electrolyte** with high ionic cond. and thermal stability)

L29 ANSWER 12 OF 26 HCA COPYRIGHT 2004 ACS on STN

138:14206 Polymerizable boric acid ester compounds and their manufacture and use as polymer polyelectrolytes for electric devices. Yokoyama, Akihito; Yabe, Takeshi (NOF Corporation, Japan). Jpn. Kokai Tokkyo Koho JP 2002348323 A2 20021204, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-153804 20010523.

AB The compds. useful for secondary batteries and capacitors, are the esters of a polyoxyalkylene (meth)acrylate macromer with boric acid or its anhydride and have residual Cl content of <100 ppm. Thus, ethoxylating 2-hydroxyethyl methacrylate with ethylene oxide using BF3-di-Et ether complex gave a macromer 284 g of which was heated with 11.6 g boric anhydride at 80° in the presence of dry air for 12 h to give a macromer borate ester (I) with Cl content <1 ppm. Polymg. 4.00 g the I in the presence of 2.29 g LiTFSI gave a **polymer electrolyte** with **cond.** 2.62x10-3 and 1.33x10-1 S/m at 25 and 80°, resp.

IT **477762-06-4P**
(electrolytes; manuf. of macromer borate esters for **polymer electrolytes** for elec. devices)

RN 477762-06-4 HCA

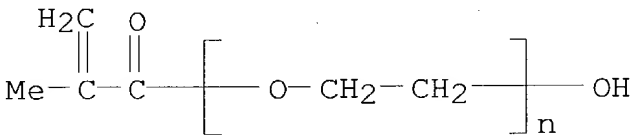
CN Poly(oxy-1,2-ethanediyl), α-(2-methyl-1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 340814-66-6
CMF (C2 H4 O)n C4 H6 O2 . x B H3 O3

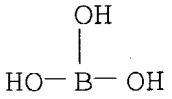
CM 2

CRN 25736-86-1
CMF (C2 H4 O)n C4 H6 O2
CCI PMS



CM 3

CRN 10043-35-3
CMF B H3 O3



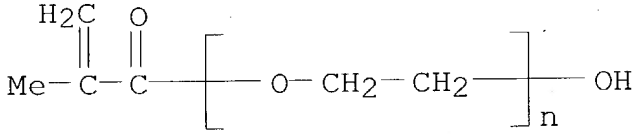
IT **340814-66-6P 340814-67-7P 477762-05-3P**
(macromer; manuf. of macromer borate esters for **polymer electrolytes** for elec. devices)

RN 340814-66-6 HCA

CN Poly(oxy-1,2-ethanediyl), α-(2-methyl-1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

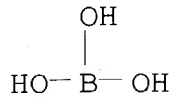
CM 1

CRN 25736-86-1
CMF (C2 H4 O)n C4 H6 O2
CCI PMS



CM 2

CRN 10043-35-3
CMF B H3 O3

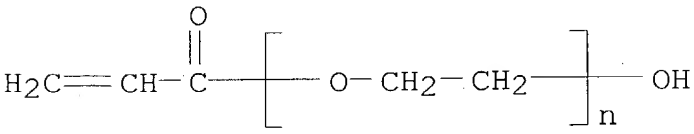


RN 340814-67-7 HCA

CN Poly(oxy-1,2-ethanediyl), α-(1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

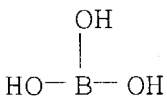
CM 1

CRN 26403-58-7
CMF (C2 H4 O)n C3 H4 O2
CCI PMS



CM 2

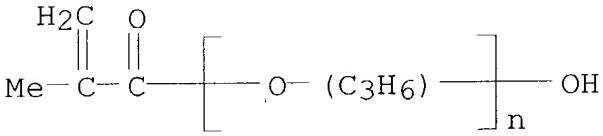
CRN 10043-35-3
CMF B H3 O3



RN 477762-05-3 HCA
CN Poly[oxy(methyl-1,2-ethanediyl)], α-(2-methyl-1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

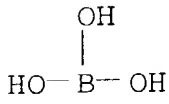
CM 1

CRN 39420-45-6
CMF (C3 H6 O)n C4 H6 O2
CCI IDS, PMS



CM 2

CRN 10043-35-3
CMF B H3 O3



IT **477594-01-7P 477762-07-5P 477762-08-6P 477762-49-5P**

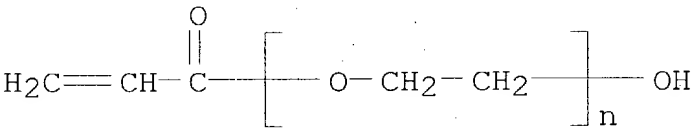
(manuf. of macromer borate esters for **polymer electrolytes** for elec. devices)

RN 477594-01-7 HCA

CN Poly(oxy-1,2-ethanediyl), α-(1-oxo-2-propenyl)-ω-hydroxy-, polymer with α-(1-oxo-2-propenyl)-ω-hydroxypoly(oxy-1,2-ethanediyl) ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

CM 1

CRN 26403-58-7
CMF (C2 H4 O)n C3 H4 O2
CCI PMS

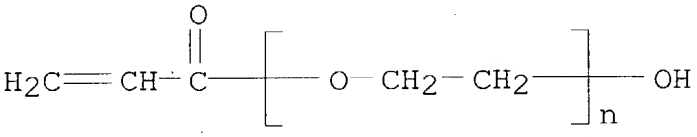


CM 2

CRN 340814-67-7
CMF (C2 H4 O)n C3 H4 O2 . x B H3 O3

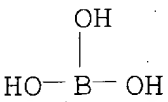
CM 3

CRN 26403-58-7
CMF (C2 H4 O)n C3 H4 O2
CCI PMS



CM 4

CRN 10043-35-3
CMF B H3 O3



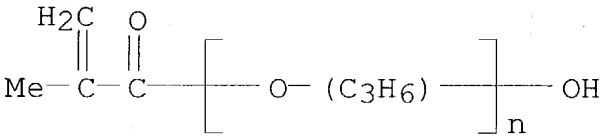
RN 477762-07-5 HCA
CN Poly[oxy(methyl-1,2-ethanediyl)], α-(2-methyl-1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 477762-05-3
CMF (C3 H6 O)n C4 H6 O2 . x B H3 O3

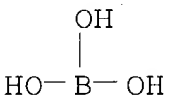
CM 2

CRN 39420-45-6
CMF (C3 H6 O)n C4 H6 O2
CCI IDS, PMS



CM 3

CRN 10043-35-3
CMF B H3 O3



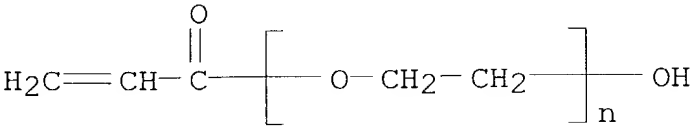
RN 477762-08-6 HCA
CN Poly(oxy-1,2-ethanediyl), α-(1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 340814-67-7
CMF (C2 H4 O)n C3 H4 O2 . x B H3 O3

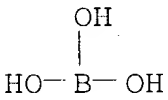
CM 2

CRN 26403-58-7
CMF (C2 H4 O)n C3 H4 O2
CCI PMS



CM 3

CRN 10043-35-3
CMF B H3 O3



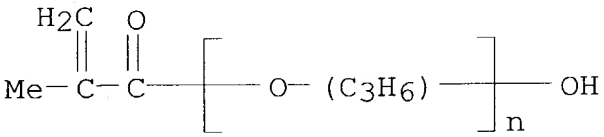
RN 477762-49-5 HCA
CN Poly[oxy(methyl-1,2-ethanediyl)], α-(2-methyl-1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3), polymer with α-(1-oxo-2-propenyl)-ω-hydroxypoly(oxy-1,2-ethanediyl) ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

CM 1

CRN 477762-05-3
CMF (C3 H6 O)n C4 H6 O2 . x B H3 O3

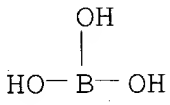
CM 2

CRN 39420-45-6
CMF (C3 H6 O)n C4 H6 O2
CCI IDS, PMS



CM 3

CRN 10043-35-3
CMF B H3 O3

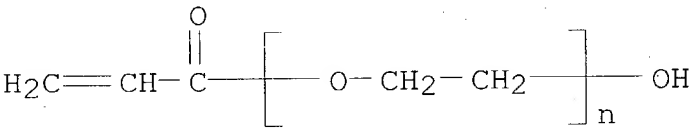


CM 4

CRN 340814-67-7
CMF (C2 H4 O)n C3 H4 O2 . x B H3 O3

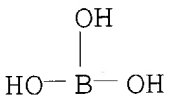
CM 5

CRN 26403-58-7
CMF (C2 H4 O)n C3 H4 O2
CCI PMS



CM 6

CRN 10043-35-3
CMF B H3 O3

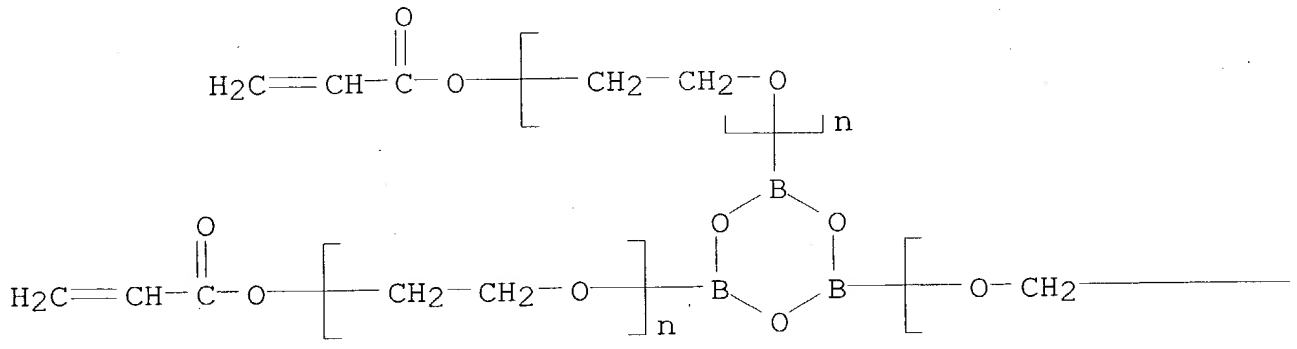


IC ICM C08F030-06
ICS C07F005-04; C08F299-00; H01G009-028; H01M010-40; H01M002-16
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 52
ST borate ester methacryloyl macromer polyoxyalkylene **polymer electrolyte**
IT Capacitors
Secondary batteries
(manuf. of macromer borate esters for **polymer electrolytes** for elec. devices)
IT **Polymer electrolytes**
(**polymerizable** boric acid ester compds. and manuf. and use as polymer polyelectrolytes for elec. devices)

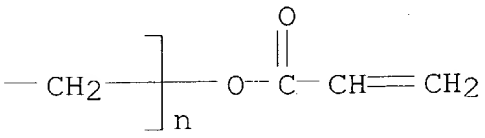
IT **477762-06-4P**
(electrolytes; manuf. of macromer borate esters for **polymer electrolytes** for elec. devices)
IT **340814-66-6P 340814-67-7P 477762-05-3P**
(macromer; manuf. of macromer borate esters for **polymer electrolytes** for elec. devices)
IT 109-63-7, Boron trifluoride diethyl ether complex
(manuf. of macromer borate esters for **polymer electrolytes** for elec. devices)
IT **477594-01-7P 477762-07-5P 477762-08-6P 477762-49-5P**
(manuf. of macromer borate esters for **polymer electrolytes** for elec. devices)

L29 ANSWER 13 OF 26 HCA COPYRIGHT 2004 ACS on STN B,D.
137:143031 Secondary lithium battery. Nishimura, Nobu; Okumura, Takefumi; Akatsuka, Masaki (Hitachi Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002216844 A2 20020802, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-11635 20010119.
AB The title battery use a Li+ **polymer electrolyte** contg. an electrolyte salt and a (meth)acrylate crosslinked cyclic boroxine (I) polymer, or a crosslinked polymer of I and a poly(alkylene oxide).
IT **444816-05-1 444816-06-2**
(compns. of electrolytes contg. crosslinked cyclic boroxine polymers for secondary lithium batteries)
RN 444816-05-1 HCA
CN Poly(oxy-1,2-ethanediyl), α,α',α''-2,4,6-boroxintriyltris[ω-[(1-oxo-2-propenyl)oxy]- (9CI) (CA INDEX NAME)

PAGE 1-A

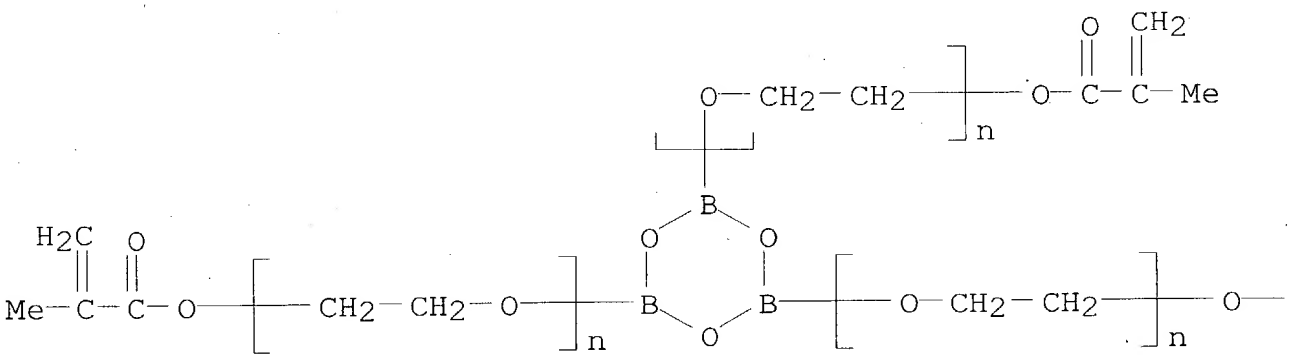


PAGE 1-B

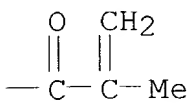


RN 444816-06-2 HCA
CN Poly(oxy-1,2-ethanediyl), α,α',α''-2,4,6-boroxintriyltris[ω-[(2-methyl-1-oxo-2-propenyl)oxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

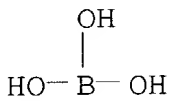


IC ICM H01M010-40
ICS C08F020-36; C08F290-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 14283-07-9, Lithium fluoroborate 21324-40-3, Lithium hexafluorophosphate 25053-12-7, Acrylonitrile-ethyl acrylate **copolymer** 25322-68-3, Poly(ethylene oxide) 28603-63-6, Acrylonitrile-ethyl methacrylate **copolymer** 33454-82-9, Lithium trifluoromethanesulfonate 444816-02-8 444816-03-9 444816-04-0 **444816-05-1 444816-06-2**
(compns. of **electrolytes** contg. crosslinked cyclic boroxine polymers for secondary lithium batteries)

L29 ANSWER 14 OF 26 HCA COPYRIGHT 2004 ACS on STN B.D.
137:8609 Secondary battery electrolyte and the battery. Yokoyama, Akihito; Wakihara, Masataka (NOF Corporation, Japan). Jpn. Kokai Tokkyo Koho JP 2002158039 A2 20020531, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-354499 20001121.
AB The electrolyte contains an ionic compd. and an org. polymer Z1[(A1O)lR1]a [Z1 = residue of a compd. having 1-4 OH groups; A1 = (different) C2-4 oxyalkylene groups; l = 0-150; a = 1-4; l+a = 0-300; R1 = H, cyanoethyl group, or R3CH:CR3CO-; and R2 and R3 = H or Me] or borate ester of the polymer.
IT **106008-94-0**, Poly(ethylene glycol) methoxide, borate ester **340814-65-5 340814-66-6**
(compns. of oxyalkylene **polymers** for **electrolytes** in secondary lithium batteries)
RN 106008-94-0 HCA
CN Poly(oxy-1,2-ethanediyl), α-methyl-ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

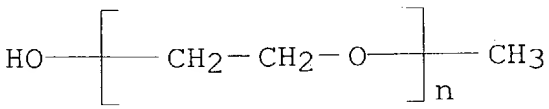
CM 1

CRN 10043-35-3
CMF B H3 O3



CM 2

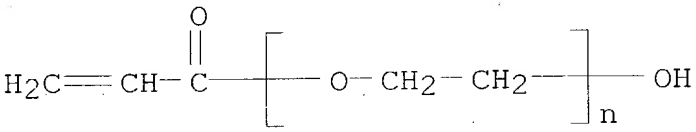
CRN 9004-74-4
CMF (C2 H4 O)n C H4 O
CCI PMS



RN 340814-65-5 HCA
CN Poly(oxy-1,2-ethanediyl), α-(1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3) ester with α-methyl-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

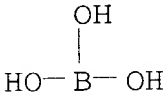
CM 1

CRN 26403-58-7
CMF (C2 H4 O)n C3 H4 O2
CCI PMS



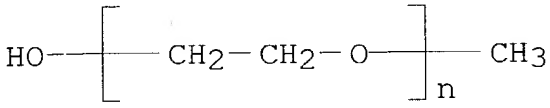
CM 2

CRN 10043-35-3
CMF B H3 O3



CM 3

CRN 9004-74-4
CMF (C2 H4 O)n C H4 O
CCI PMS

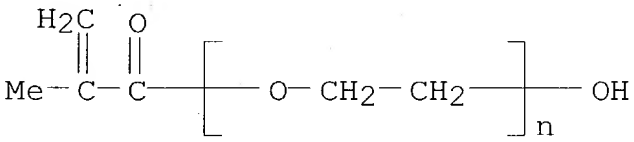


RN 340814-66-6 HCA
CN Poly(oxy-1,2-ethanediyl), α-(2-methyl-1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX

NAME)

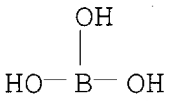
CM 1

CRN 25736-86-1
CMF (C2 H4 O)n C4 H6 O2
CCI PMS



CM 2

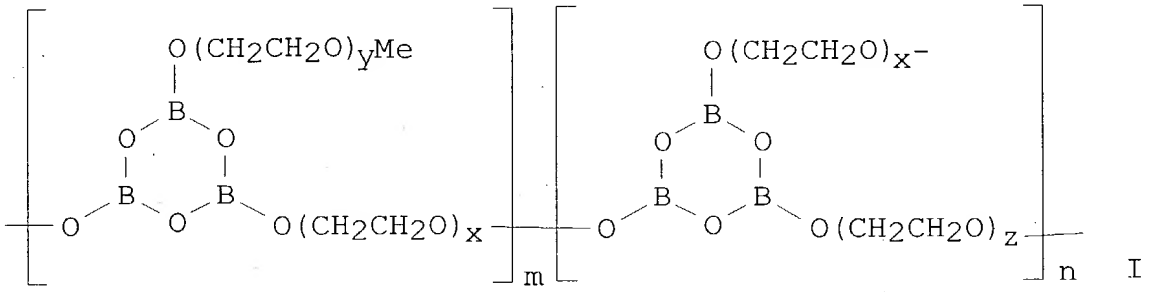
CRN 10043-35-3
CMF B H3 O3



IC ICM H01M010-40
ICS C08G065-28; C08G065-328; C08G065-329; C08G065-333; C08K003-24; C08L071-08
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary battery oxyalkylene **polymer** borate **electrolyte** compn
IT Battery electrolytes
(compns. of oxyalkylene **polymers** for **electrolytes** in secondary lithium batteries)
IT Polyoxyalkylenes, uses
(compns. of oxyalkylene **polymers** for **electrolytes** in secondary lithium batteries)
IT 107-13-1D, Acrylonitrile, reaction products with oxyalkylene polymers 25322-68-3, Poly(ethylene glycol) 25852-47-5, Poly(ethylene glycol) dimethacrylate 26915-72-0, Poly(ethylene glycol), methyl ether, methacrylate 26915-72-0D, reaction products with acrylonitrile 31694-55-0D, reaction products with acrylonitrile 32171-39-4D, reaction products with acrylonitrile 33454-82-9, Lithium trifluoromethanesulfonate **106008-94-0**, Poly(ethylene glycol) methoxide, borate ester **340814-65-5** **340814-66-6**
(compns. of oxyalkylene **polymers** for **electrolytes** in secondary lithium batteries)

L29 ANSWER 15 OF 26 HCA COPYRIGHT 2004 ACS on STN B,D.
136:203051 Nonaqueous electrolyte batteries using porous solid macromolecular electrolytes. Sasaki, Hideki; Yasuda, Hideo (Japan Storage Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002056895 A2 20020222, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-240472 20000808.

GI



I

AB The batteries contain porous solid macromol. electrolytes contg. metaboric acid triester with polyethylene glycol monomethyl ether, and/or I (x, y, m, n = natural no.). The esters may be included at surfaces of anodes and/or cathodes, in pores of anodes and/or cathodes, and/or between cathodes and anodes. Li batteries using the electrolytes show high active mass utilization, and high discharge capacity.

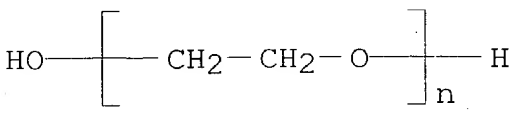
IT **400838-03-1DP**, lithium complexes **400861-58-7DP**, lithium complexes
(electrolytes; nonaq. electrolyte batteries using porous solid metaboric acid polyoxyethylene ester electrolytes)

RN 400838-03-1 HCA

CN Boric acid (H3BO3), polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) and oxirane, graft (9CI) (CA INDEX NAME)

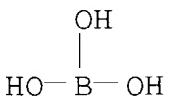
CM 1

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 2

CRN 10043-35-3
CMF B H3 O3



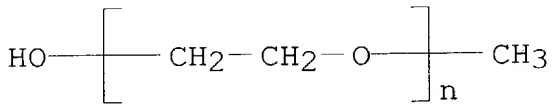
CM 3

CRN 75-21-8
CMF C2 H4 O

RN 400861-58-7 HCA
CN Boric acid (H3BO3), polymer with 2,2'-[oxybis(2,1-ethanediyloxy)]bis[ethanol], ester with α-methyl-ω-hydroxypoly(oxy-1,2-ethanediyl), graft (9CI) (CA INDEX NAME)

CM 1

CRN 9004-74-4
CMF (C2 H4 O)n C H4 O
CCI PMS



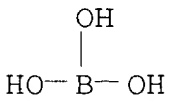
CM 2

CRN 204993-10-2
CMF (C8 H18 O5 . B H3 O3)x
CCI PMS

CM 3

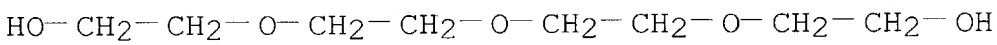
CRN 10043-35-3

CMF B H3 O3

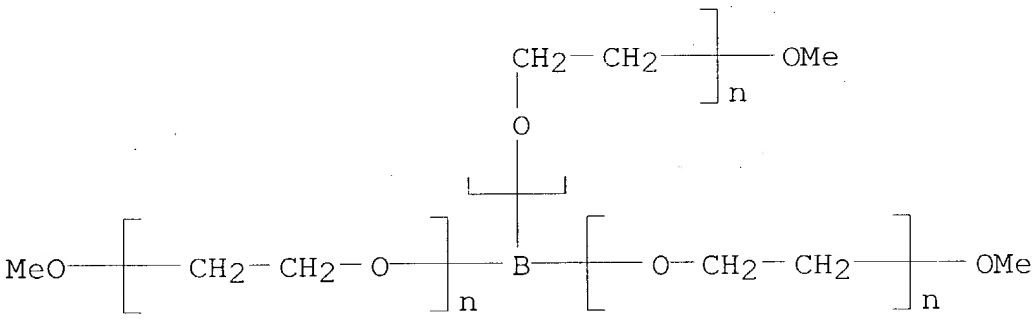


CM 4

CRN 112-60-7
CMF C8 H18 O5



IT **75915-45-6**
(electrolytes; nonaq. electrolyte batteries using porous solid metaboric acid polyoxyethylene ester electrolytes)
RN 75915-45-6 HCA
CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-methoxy- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
ICS C08G065-26
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 37, 38
IT Battery electrolytes
Polymer electrolytes
Secondary batteries
(nonaq. **electrolyte** batteries using porous solid metaboric acid polyoxyethylene ester electrolytes)
IT 7439-93-2DP, Lithium, complexes with metaboric acid polyoxyethylene esters **400838-03-1DP**, lithium complexes
400861-58-7DP, lithium complexes
(electrolytes; nonaq. electrolyte batteries using porous solid metaboric acid polyoxyethylene ester electrolytes)

IT **75915-45-6**
(electrolytes; nonaq. electrolyte batteries using porous solid metaboric acid polyoxyethylene ester electrolytes)

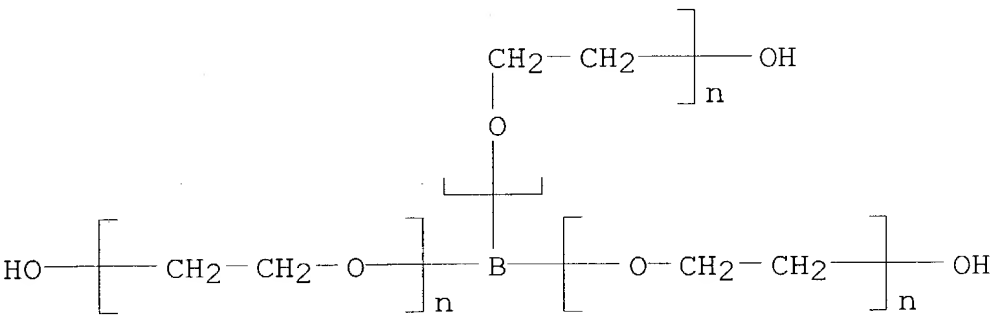
L29 ANSWER 16 OF 26 HCA COPYRIGHT 2004 ACS on STN
135:124786 Effect of additions of organic sulfornates on the conductivity of lithium **conducting polymer electrolytes**. Bakenov, Zhumabay; Ikuta, Hiromasa; Wakihara, Masataka (Department of Applied Chemistry, Graduate School of Science and Engineering, Tokyo Institute of Technology, Ookayama, Meguro-ku, Tokyo, 152-8552, Japan). Electrochemistry (Tokyo, Japan), 69(5), 312-313 (English) 2001. CODEN: EECTFA. ISSN: 1344-3542. Publisher: Electrochemical Society of Japan.

AB The electrochem. properties of the solid **polymer electrolytes** (SPE) contg. lithium trifluoromethanesulfon imide (LiTFSI) and novel lithium sulfonates have been investigated. Sulfonates as additives into the LiTFSI-based SPE showed ionic conductivities up to 5.1 x 10-4 S/cm at room temp. Improvement of the ionic cond. is attributed to the formation of the coordination centers in the system and an increase of amorphous degree of the SPE.

IT **64631-20-5**, Polyethylene glycol boric acid ester
(effect of addns. of org. sulfornates on the cond. of lithium **conducting polymer electrolytes**)

RN 64631-20-5 HCA

CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-hydroxy- (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72, 76

ST lithium fluoromethanesulfonimide sulfonate **polymer electrolyte** battery; polyethylene glycol lithium fluoromethanesulfonimide sulfonate electrolyte

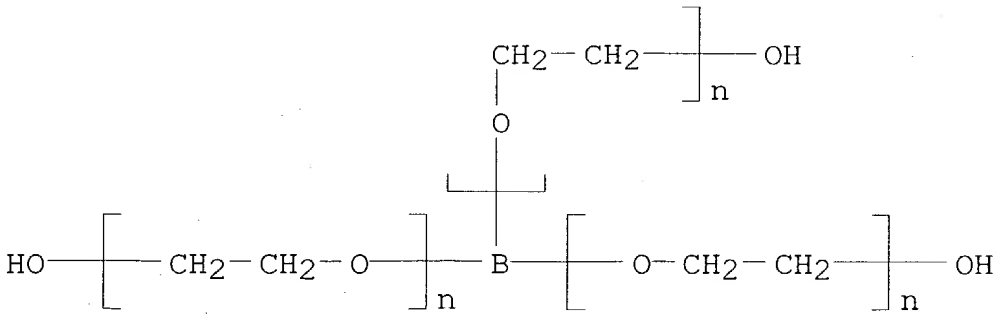
IT Battery electrolytes
Ionic conductivity
(effect of addns. of org. sulfornates on the cond. of lithium **conducting polymer electrolytes**)

IT Polyoxyalkylenes, uses
(effect of addns. of org. sulfornates on the cond. of lithium **conducting polymer electrolytes**)
IT 25322-68-3, Polyethylene glycol 53469-29-7, Lithium dodecylsulfonate **64631-20-5**, Polyethylene glycol boric acid ester 82113-65-3 158454-23-0, Persoft 350679-87-7
(effect of addns. of org. sulfornates on the cond. of lithium **conducting polymer electrolytes**)

L29 ANSWER 17 OF 26 HCA COPYRIGHT 2004 ACS on STN B.D.
135:109596 Thermally stable **polymer electrolyte** plasticized with PEG-borate ester for lithium secondary battery. Kato, Yuki; Yokoyama, Shoichi; Ikuta, Hiromasa; Uchimoto, Yoshiharu; Wakihara, Masataka (Department of Applied Chemistry, Graduate School of Science and Engineering, Tokyo Institute of Technology, Tokyo, 152-8552, Japan). Electrochemistry Communications, 3(3), 128-130 (English) 2001. CODEN: ECCMF9. ISSN: 1388-2481. Publisher: Elsevier Science B.V..

AB A novel **polymer electrolyte** was prepd. by employing poly(ethyleneglycol) (PEG)-borate ester as plasticizer to the electrolyte composed of poly(ethylene glycol) methacrylate (PEGMA) and lithium bis-trifluoromethanesulfonimide (LiTFSI). The PEG-borate ester shows good thermal stability and high flash point. The ionic **cond.** of the **polymer electrolyte** increases with increasing amt. of the PEG-borate ester and exhibits greater value than 10-4 S/cm at 30°C and 10-3 S/cm at 60°C.

IT **64631-20-5**, Polyethylene glycol boric acid ester
(thermally stable **polymer electrolyte** plasticized with PEG-borate ester for lithium secondary battery)
RN 64631-20-5 HCA
CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-hydroxy- (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72
ST thermally stable **polymer electrolyte** lithium

battery; plasticized PEG borate electrolyte battery; PEG methacrylate lithium trifluoromethanesulfonimide electrolyte

IT Battery **electrolytes**
Ionic **conductivity**
Thermal stability
(thermally stable **polymer electrolyte** plasticized with PEG-borate ester for lithium secondary battery)

IT 25249-16-5, Polyethylene glycol monomethacrylate 25721-76-0, Polyethylene glycol dimethacrylate **64631-20-5**, Polyethylene glycol boric acid ester 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide
(thermally stable **polymer electrolyte** plasticized with PEG-borate ester for lithium secondary battery)

L29 ANSWER 18 OF 26 HCA COPYRIGHT 2004 ACS on STN P.D.
135:61972 Effects of addition of a boric acid ester monomer to electrolyte solutions and gel electrolytes on their ionic transport properties. Hirakimoto, Takuro; Nishiura, Masahito; Watanabe, Masayoshi (Department of Chemistry and Biotechnology, 79-5 Tokiwadai, Yokohama National University, Yokohama, Hodogaya-ku, 240-8501, Japan). Electrochimica Acta, 46(10-11), 1609-1614 (English) 2001. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..

AB A boric acid ester monomer with polymerizable acryloyl group was designed and synthesized. The Lewis acidic nature of this monomer induces interactions with salts in electrolyte solns. and in **polymer** gel **electrolytes**. When the boric acid ester monomer was added to various electrolyte solns., both of the soly. of salts and ionic cond. of the solns. increased considerably. The boric acid ester monomer was polymd. to fix it to the matrix **polymer** of gel **electrolytes**. The ionic cond. of the gel electrolytes increased as compared to that of electrolytes without the boric acid ester monomer. The cond. enhancement effect was greater for the **polymer** gel **electrolytes** than for the electrolyte solns.

IT **345664-35-9**
(prepn. of biphenylborate ester acrylate and role on ionic cond. of lithium salt-solvent and -gel electrolytes)

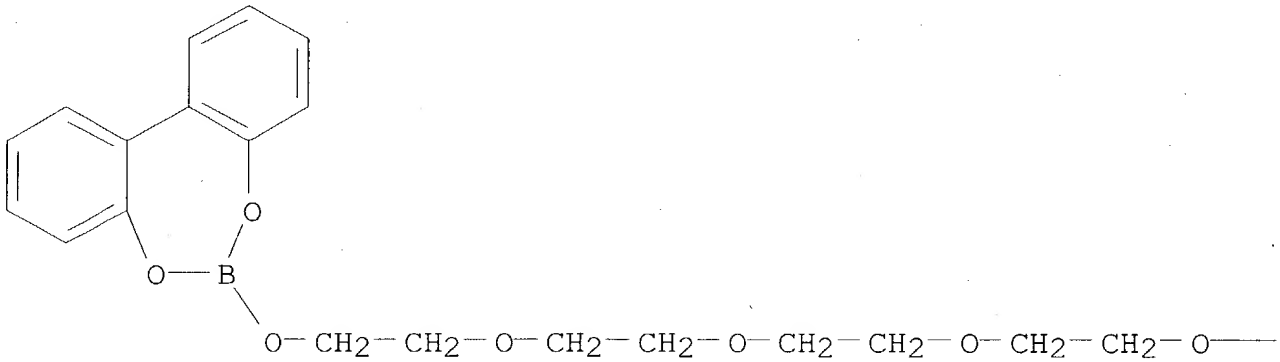
RN 345664-35-9 HCA

CN 2-Propenoic acid, 2-[2-[2-[(dibenzo[d,f][1,3,2]dioxaborepin-6-yloxy)ethoxy]ethoxy]ethoxy]ethyl ester, polymer with methyloxirane polymer with oxirane ether with 1,2,3-propanetriol (3:1) tri-2-propenoate (9CI) (CA INDEX NAME)

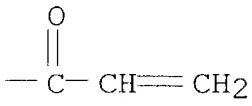
CM 1

CRN 345580-60-1
CMF C23 H27 B O8

PAGE 1-A



PAGE 1-B

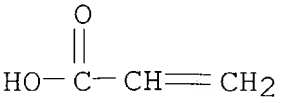


CM 2

CRN 111804-95-6
CMF C3 H8 O3 . 3 (C3 H6 O . C2 H4 O)x . 3 C3 H4 O2

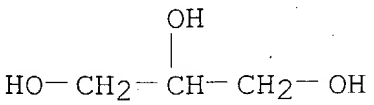
CM 3

CRN 79-10-7
CMF C3 H4 O2



CM 4

CRN 56-81-5
CMF C3 H8 O3

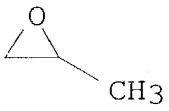


CM 5

CRN 9003-11-6
CMF (C3 H6 O . C2 H4 O)x
CCI PMS

CM 6

CRN 75-56-9
CMF C3 H6 O



CM 7

CRN 75-21-8
CMF C2 H4 O

CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 72, 76

ST boric acid ester monomer prepn Lewis acidity; acryloyl borate ester prepn **polymn electrolyte**; ionic cond gel electrolyte borate ester

IT Ionic conductivity
Lewis acidity
Polymer electrolytes
(prepn. of biphenylborate ester acrylate and role on ionic cond.

of lithium salt-solvent and -gel electrolytes)

IT **345664-35-9**
(prepn. of biphenylborate ester acrylate and role on ionic cond. of lithium salt-solvent and -gel electrolytes)

L29 ANSWER 19 OF 26 HCA COPYRIGHT 2004 ACS on STN

135:7801 Secondary battery electrolytes and the batteries. Yokoyama, Shoichi; Wakihara, Masataka; Kobayashi, Takao; Suwa, Kentaro (Nof Corporation, Japan). PCT Int. Appl. WO 2001039316 A1 20010531, 53 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CZ, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2000-JP8254 20001122. PRIORITY: JP 1999-332586 19991124; JP 2000-87754 20000328.

AB The electrolytes contain a n ionic compd. and a polymer, where the polymer is Z1[(A1O)lR1]a (R1 = cyanoethyl, C1-12 hydrocarbon group, or H; Z1 = a residue of a compd. having 1-6 OH groups; A1O is ≥1 C2-4 oxyalkylene group; l = 0-600, a = 1-6, and a+l = 0-600), or its borate ester or Z2[(A2O)mR2]b (R2 = H, cyanoethyl or R3CH:CR4CO; Z2 = OH or residue of a compd. having 1-4 OH groups; A2O is ≥1 C2-4 oxyalkylene group; R3 and R4 = H or Me; m = 0-150, b = 1-4, and m+b = 0-300).

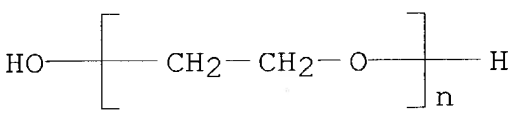
IT **39434-94-1 74750-04-2 106008-94-0 340814-62-2 340814-64-4 340814-65-5 340814-66-6 340814-67-7**
(compns. of oxyalkylene **polymer electrolytes** for secondary lithium batteries)

RN 39434-94-1 HCA

CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

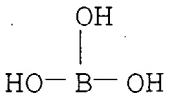
CM 1

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 2

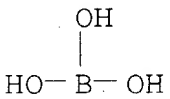
CRN 10043-35-3
CMF B H3 O3



RN 74750-04-2 HCA
CN Oxirane, methyl-, polymer with oxirane, monomethyl ether, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

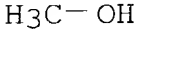
CM 1

CRN 10043-35-3
CMF B H3 O3



CM 2

CRN 67-56-1
CMF C H4 O

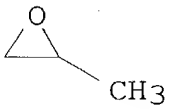


CM 3

CRN 9003-11-6
CMF (C3 H6 O . C2 H4 O)x
CCI PMS

CM 4

CRN 75-56-9
CMF C3 H6 O



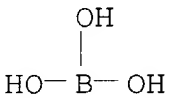
CM 5

CRN 75-21-8
CMF C2 H4 O

RN 106008-94-0 HCA
CN Poly(oxy-1,2-ethanediyl), α-methyl-ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

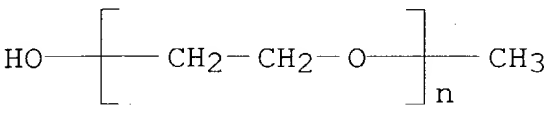
CM 1

CRN 10043-35-3
CMF B H3 O3



CM 2

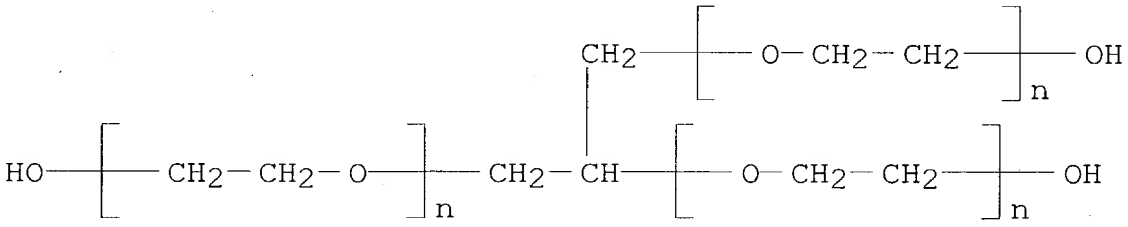
CRN 9004-74-4
CMF (C2 H4 O)n C H4 O
CCI PMS



RN 340814-62-2 HCA
CN Poly(oxy-1,2-ethanediyl), α,α',α''-1,2,3-propanetriyltris[ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

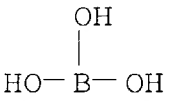
CM 1

CRN 31694-55-0
CMF (C2 H4 O)n (C2 H4 O)n (C2 H4 O)n C3 H8 O3
CCI PMS



CM 2

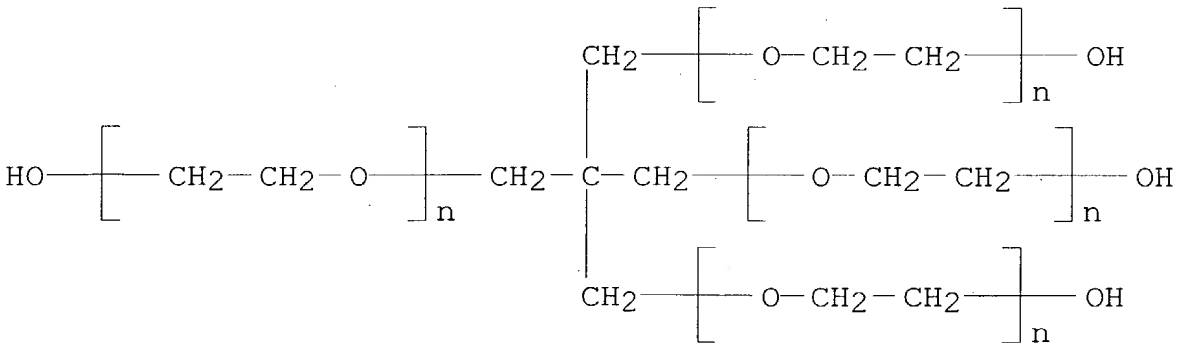
CRN 10043-35-3
CMF B H3 O3



RN 340814-64-4 HCA
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1), ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

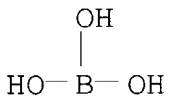
CM 1

CRN 42503-45-7
CMF (C2 H4 O)n (C2 H4 O)n (C2 H4 O)n (C2 H4 O)n C5 H12 O4
CCI PMS



CM 2

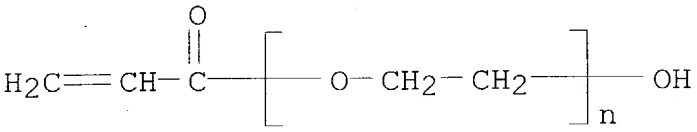
CRN 10043-35-3
CMF B H3 O3



RN 340814-65-5 HCA
CN Poly(oxy-1,2-ethanediyl), α-(1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3) ester with α-methyl-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

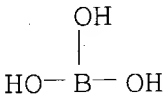
CM 1

CRN 26403-58-7
CMF (C2 H4 O)n C3 H4 O2
CCI PMS



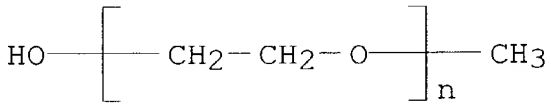
CM 2

CRN 10043-35-3
CMF B H3 O3



CM 3

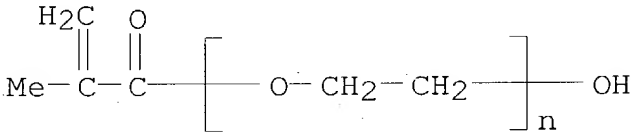
CRN 9004-74-4
CMF (C2 H4 O)n C H4 O
CCI PMS



RN 340814-66-6 HCA
CN Poly(oxy-1,2-ethanediyl), α-(2-methyl-1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

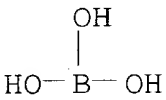
CM 1

CRN 25736-86-1
CMF (C2 H4 O)n C4 H6 O2
CCI PMS



CM 2

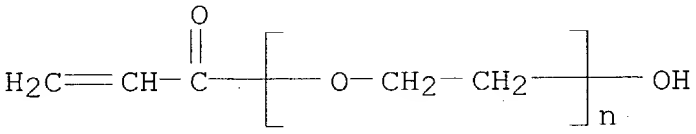
CRN 10043-35-3
CMF B H3 O3



RN 340814-67-7 HCA
CN Poly(oxy-1,2-ethanediyl), α-(1-oxo-2-propenyl)-ω-hydroxy-, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

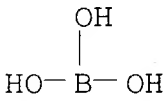
CM 1

CRN 26403-58-7
CMF (C2 H4 O)n C3 H4 O2
CCI PMS



CM 2

CRN 10043-35-3
CMF B H3 O3



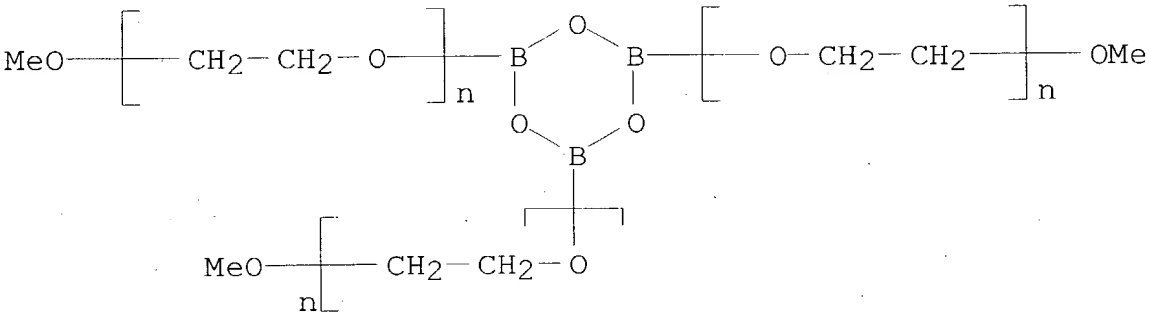
IC H01M010-40; C08G065-02; C08G065-332
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary battery oxyalkylene **polymer electrolyte**
IT Battery electrolytes
(compns. of oxyalkylene **polymer electrolytes** for secondary lithium batteries)
IT Polyoxyalkylenes, uses
(compns. of oxyalkylene **polymer electrolytes** for secondary lithium batteries)
IT 7791-03-9, Lithium perchlorate 25322-68-3 25736-86-1 25852-47-5 26915-72-0 **39434-94-1 74750-04-2** 90076-65-6 **106008-94-0 340814-62-2 340814-64-4 340814-65-5 340814-66-6 340814-67-7**
(compns. of oxyalkylene **polymer electrolytes** for secondary lithium batteries)

Mehta and Boroxine polymers

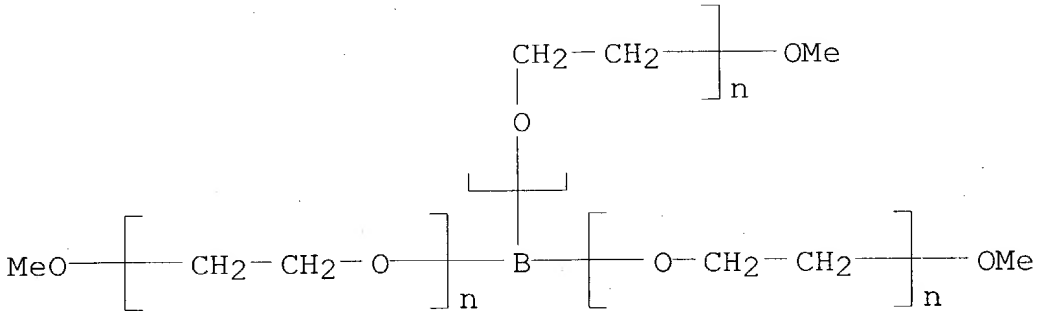
L29 ANSWER 20 OF 26 HCA COPYRIGHT 2004 ACS on STN
132:208862 The use of boroxine rings for the development of high performance **polymer electrolytes**. Mehta, Mary Anne; Fujinami, Tatsuo; Inoue, Satoshi; Matsushita, Kazumi; Miwa, Takashi; Inoue, Takayoshi (Department of Materials Science, Faculty of Engineering, Shizuoka University, Hamamatsu, 432-8561, Japan). Electrochimica Acta, 45(8-9), 1175-1180 (English) 2000. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..
AB Boroxine ring contg. additives, Bx(n) = B3O3[O(CH2CH2O)nCH3]3, were found to be compatible with a wide variety of polymer hosts. **Polymer electrolytes** exhibiting room temp. conductivities of up to 10-5 S cm-1 were obtained by incorporation of Bx(n) and LiCF3SO3 into poly(Me methacrylate) and propylene

oxide-ethylene oxide co-polymers. Polymers composed of inter-connecting networks of boroxine rings were also investigated as suitable hosts for the boroxine additives B3O3[O(CH2CH2O)nCH3]3. Poly(Me methacrylate) systems exhibited an electrochem. stability window in the region of 4.9 V, while transference no. measurements indicated high Li+ ion cond.

IT **122164-92-5P**
(high performance **polymer electrolytes** contg. boroxine rings)
RN 122164-92-5 HCA
CN Poly(oxy-1,2-ethanediyl), α,α',α''-2,4,6-boroxintriyltris[ω-methoxy- (9CI) (CA INDEX NAME)



IT **75915-45-6P**
(intermediate; high performance **polymer electrolytes** contg. boroxine rings)
RN 75915-45-6 HCA
CN Poly(oxy-1,2-ethanediyl), α,α',α''-borylidynetris[ω-methoxy- (9CI) (CA INDEX NAME)



CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 76
ST boroxine ring **polymer electrolyte**
IT Ionic **conductivity**
Polymer electrolytes
(high performance **polymer electrolytes** contg.

boroxine rings)

IT 112-60-7DP, Tetraethylene glycol, reaction products with boron oxide 1303-86-2DP, Boron oxide, reaction products with polyols 9004-74-4DP, Polyethylene glycol monomethyl ether, reaction products with polyol and boron oxide 25791-96-2DP, Polypropylene glycol glycerol ether, reaction products with boron oxide and polyols **122164-92-5P**
(high performance **polymer electrolytes** contg. boroxine rings)

IT 9011-14-7, PMMA
(host; high performance **polymer electrolytes** contg. boroxine rings)

IT **75915-45-6P**
(intermediate; high performance **polymer electrolytes** contg. boroxine rings)

Mehta et al.

L29 ANSWER 21 OF 26 HCA COPYRIGHT 2004 ACS on STN
131:288745 Boroxine ring containing **polymer electrolytes**. Mehta, Mary Anne; Fujinami, Tatsuo; Inoue, Takayoshi (Faculty of Engineering, Department of Materials Science, Shizuoka University, Hamamatsu, Japan). Journal of Power Sources, 81-82, 724-728 (English) 1999. CODEN: JPSODZ. ISSN: 0378-7753. Publisher: Elsevier Science S.A..

AB Anion trapping **polymer electrolytes** incorporating boroxine (B3O3) rings and oligoether side chains have been demonstrated to combine high Li+ ion transference nos., thermal stability and an electrochem. stability window in the region of 4.9 V. Ionic conductivities of up to 1.6+10-5 S cm-1 at 30° and which exhibit Volger-Tamman-Fulcher (VTF) behavior have been obsd.

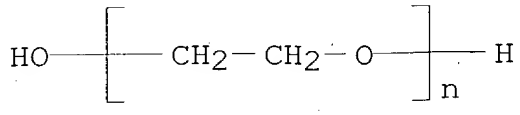
IT **196107-76-3D**, reaction products with polyethylene glycol monomethyl ether
(boroxine ring contg. **polymer electrolytes**)

RN 196107-76-3 HCA

CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, polymer with boron oxide (B2O3) (9CI) (CA INDEX NAME)

CM 1

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 2

CRN 1303-86-2
CMF B2 O3
CCI MAN
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT Battery electrolytes
Glass transition temperature
Ionic conductivity
Polymer electrolytes
Ring
(boroxine ring contg. **polymer electrolytes**)
IT Polyoxyalkylenes, reactions
(boroxine ring contg. **polymer electrolytes**)
IT 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6
(boroxine ring contg. **polymer electrolytes**)
IT 289-56-5D, Boroxin, polymers 9004-74-4D, Polyethylene glycol monomethyl ether, reaction products with boron oxide-polyethylene glycol copolymer **196107-76-3D**, reaction products with polyethylene glycol monomethyl ether
(boroxine ring contg. **polymer electrolytes**)
IT 112-60-7, Tetraethylene glycol 1303-86-2, Boron oxide b2o3, reactions 9004-74-4, Polyethylene glycol methyl ether
(boroxine ring contg. **polymer electrolytes**)

Mehta et al OF RECORD

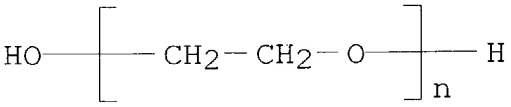
L29 ANSWER 22 OF 26 HCA COPYRIGHT 2004 ACS on STN
127:263325 Li+ transference number enhancement in **polymer electrolytes** by incorporation of anion trapping boroxine rings into the polymer host. Mehta, Mary Anne; Fujinami, Tatsuo (Department Materials Science, Faculty Engineering, Shizuoka University, Hamamatsu, 432, Japan). Chemistry Letters (9), 915-916 (English) 1997. CODEN: CMLTAG. ISSN: 0366-7022. Publisher: Chemical Society of Japan.
AB **Polymer electrolytes** incorporating boroxine rings with pendant oligoether side chains and a variety of dissolved lithium salts, including LiCF3SO3, LiBF4, LiCl, and LiPF6, were prepd. The host polymers were prepd. by treating solns. of PEG monomethyl ether and tetraethylene glycol with boric oxide, B2O3. High ionic conductivities and Li+ transference nos. were obsd., the latter being ascribed to the anion trapping ability of the boroxine ring.
IT **196107-76-3DP**, reaction products with polyethylene glycol

monomethyl ether
(Li+ transference no. enhancement in PEG electrolytes by incorporation of anion trapping boroxine rings)

RN 196107-76-3 HCA
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, polymer with boron oxide (B2O3) (9CI) (CA INDEX NAME)

CM 1

CRN 25322-68-3
CMF (C2 H4 O)n H2 O
CCI PMS



CM 2

CRN 1303-86-2
CMF B2 O3
CCI MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CC 36-5 (Physical Properties of Synthetic High Polymers)
Section cross-reference(s): 76

ST polyethylene glycol methyl ether boroxine electrolyte; tetraethylene glycol boroxine **polymer electrolyte**; lithium ion cond polyethylene glycol boroxine

IT 289-56-5DP, Boroxine, polymers 9004-74-4DP, Polyethylene glycol monomethyl ether, reaction products with boron oxide-polyethylene glycol copolymer **196107-76-3DP**, reaction products with polyethylene glycol monomethyl ether
(Li+ transference no. enhancement in PEG electrolytes by incorporation of anion trapping boroxine rings)

L29 ANSWER 23 OF 26 HCA COPYRIGHT 2004 ACS on STN
115:94059 Anchoring coatings in electrically conducting plastic films. Nose, Katsuhiko; Tatsuta, Hideaki; Kuze, Katsuro (Toyobo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03059909 A2 19910314 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-195773 19890727.

AB The title coatings for improving the adhesion of thermoplastic support films and elec. conductive layers comprise a water-sol., dispersible or emulsifiable polymer and org. borate polymers (A) and/or their mixt. with vinyl alc. polymers. Thus, a copolyester from terephthalic acid 50, isophthalic acid 48.5

5-sodiosulfoisophthalic acid 15, ethylene glycol 80, and neopentyl glycol 20 mol% was dispersed to 10% in an aq. dispersion of a poly (vinyl alc.) (I) and poly(glycerin borate) (II) such that the I:II wt. ratio was 1:4, and the wt. ratio of (I + II) to the copolyester was 20% (as solids); and combined with 20% (based on resin) blocked MDI to give a coating compn. An oriented PET film bearing an anchoring 0.15 μm layer of the compn.; after being sputter-coated with an 800 Å layer of ITO had cross-cut adhesion 100 (no peeling), and surface elec. resistance 2 + 103 and 3 + 103 initially and after folding, vs. 85, 3 + 102 and 107, resp., without II.

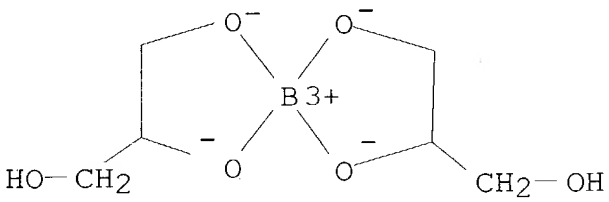
IT **125539-52-8**
(anchor coatings contg., on elec. conductive films)

RN 125539-52-8 HCA

CN Borate(1-), bis[1,2,3-propanetriolato(2-)-O1,O2]-, (T-4)-, hydrogen, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 49625-59-4
CMF C6 H12 B O6 . H
CCI CCS



CM 2

CRN 75-21-8
CMF C2 H4 O

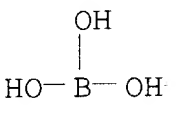
IC ICM H01B005-14
ICS B32B027-00; B32B027-08

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 42
IT 73144-93-1, Ethylene glycol-isophthalic acid-neopentyl glycol-5-sodiosulfoisophthalic acid-terephthalic acid copolymer 125635-31-6
(anchor coatings contg. borate **polymers**, for elec. **conductive** films)
IT 115312-56-6 **125539-52-8** 135670-76-7
(anchor coatings contg., on elec. conductive films)

L29 ANSWER 24 OF 26 HCA COPYRIGHT 2004 ACS on STN
110:214917 Image recording ink transferrable to paper after application of energy. Yuasa, Toshiya; Fukumoto, Hiroshi; Kan, Fumitaka; Koizumi, Norihiko; Tohyama, Noboru (Canon K. K., Japan). Eur. Pat. Appl. EP 292991 A2 19881130, 23 pp. DESIGNATED STATES: R: DE, FR, GB. (English). CODEN: EPXXDW. APPLICATION: EP 1988-108504 19880527. PRIORITY: JP 1987-131585 19870529; JP 1987-131586 19870529; JP 1987-139707 19870605.
AB The title ink comprises a nonadhesive aq. dispersion of a crosslinked substance and the ink has loss elasticity (G'')/storage elasticity modulus (G') ratio 0.1-10, when angular velocity 1 radian/s, in which adhesiveness is imparted by application of energy. A compn. contg. H2O 100, poly(vinyl alc) (sapon. degree 98.5%) 9, and water-sol. blue dye 6 parts was mixed at 70°, 0.6 part borax was added to gel the ink compn., and pH was adjusted to 7-11. The gel ink had G''/G' 1.6 and was transferable to a substrate by application of 0.5 mA in any pattern depending on the distribution of current over the ink layer.
IT **55199-96-7**
(aq. dispersion, ink contg., with good adhesion after application of elec. charge)
RN 55199-96-7 HCA
CN Ethenol, homopolymer, ester with boric acid (H3BO3) (9CI) (CA INDEX NAME)

CM 1

CRN 10043-35-3
CMF B H3 O3



CM 2

CRN 9002-89-5
CMF (C2 H4 O)x
CCI PMS

CM 3

CRN 557-75-5
CMF C2 H4 O

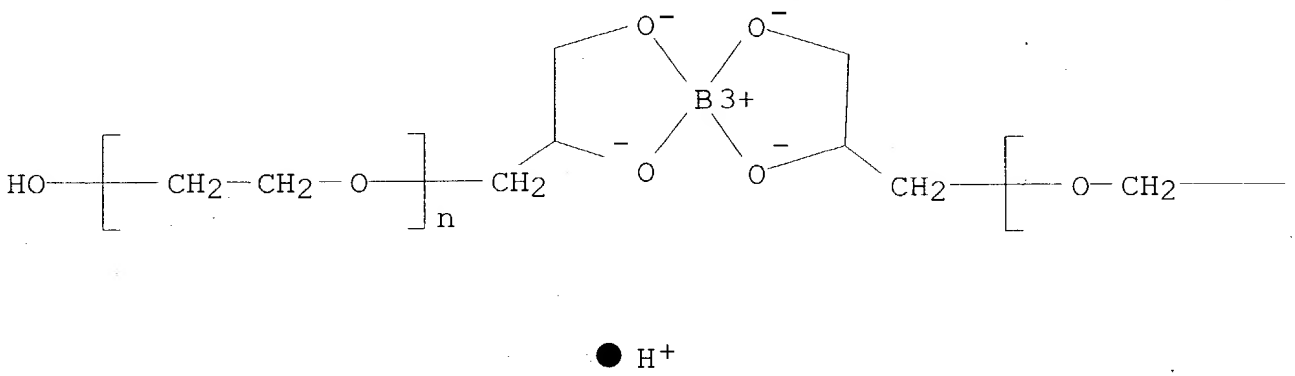
H_2C═CH—OH

IC ICM B41M005-24
CC 42-12 (Coatings, Inks, and Related Products)
IT Inks
(**polymer** crosslinked by **electrolyte** for vehicle of, transferable to paper on application of elec. charge)
IT **55199-96-7** 68475-51-4
(aq. dispersion, ink contg., with good adhesion after application of elec. charge)

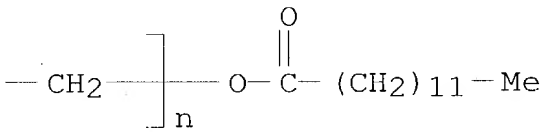
L29 ANSWER 25 OF 26 HCA COPYRIGHT 2004 ACS on STN
110:105025 Development of presensitized lithographic plate. Toyama, Tadao; Oba, Hisao; Kunichika, Kenji (Fuji Photo Film Co., Ltd., Japan). Eur. Pat. Appl. EP 272686 A2 19880629, 12 pp. DESIGNATED STATES: R: CH, DE, FR, GB, IT, LI, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1987-119050 19871222. PRIORITY: JP 1986-307056 19861223.
AB An imagewise exposed presensitized lithog. plate contg. a photosensitive layer comprising an o-quinonediazide compd. and alkali-sol. resins is developed by using an alk. developer, whose surface tension is adjusted to ≤50 dyne/cm at 25° by adding ≥1 surfactant. A predetd. amt. of the fresh developer is continuously supplied for the stable development of the presensitized lithog. plate. The developer with pH ≥10.5 contains ≥1 additive selected from neutral salts, chelating agents, complexes, cationic **polymers**, amphoteric **electrolytes**, reducing inorg. salts, Li compds., org. metal surfactants, org. B compds., quaternary ammonium salts, and org. solvents, and is supplied in an amt. of 50-200 mL/m2 of the presensitized lithog. plate.
IT **91631-17-3**
(developers contg. sodium silicate and, with controlled surface tension for presensitized lithog. plates contg. alkali-sol. resins and quinonediazide compd.)
RN 91631-17-3 HCA
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, ether with hydrogen bis[1,2,3-propanetriolato(2-)-O1,O2]borate(1-) (2:1),

monotridecanoate, (T-4)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM G03F007-26
CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 2715-48-2D, dodecyl derivs., sodium salts 2795-39-3, Megafac F-110 52550-45-5, Megafac F-142D 82030-83-9, Surflon S-131 85568-56-5, Megafac F-177 **91631-17-3**
(developers contg. sodium silicate and, with controlled surface tension for presensitized lithog. plates contg. alkali-sol. resins and quinonediazide compd.)

L29 ANSWER 26 OF 26 HCA COPYRIGHT 2004 ACS on STN
86:140652 Interaction of boric acid with aqueous solutions of poly(vinyl alcohol). Vlasyuk, N. V.; Deinega, Yu. F.; Romasenko, V. P. (Inst. Kolloidn. Khim. Khim. Vody, Kiev, USSR). Ukrainskii Khimicheskii Zhurnal (Russian Edition), 43(2), 201-3 (Russian) 1977. CODEN: UKZHAU. ISSN: 0041-6045.
AB Limiting concn. of H3BO3 bonded to poly(vinyl alc.) (I) in poly(vinyl borate) (II) [**37187-14-7**] was 1% relative to

dry I. Addn. of increasing amts. of H3BO3 to aq. solns. of I strengthened the 3-dimensional network of resulting II and shifted its viscosity-shear stress curves toward higher viscosities until the limiting concn. of bonded H3BO3 was reached. Further addns. of H3BO3 had no effect on the position of the curve. The dependence of the viscosity of aq. soln. of I of varying concns., and of their elec. cond., on the concn. of added H3BO3 confirmed the existence of limiting concn. of bonded H3BO3 equal to 1%.

CC 35-6 (Synthetic High Polymers)

IT Boric acid, ethenyl ester, **homopolymer**
(elec. **cond.** and viscosity of, compn. effect on)

=> d l30 2,5,9,18,15,18,24,26,27,28 cbib abs hitstr hitind

L30 ANSWER 2 OF 28 HCA COPYRIGHT 2004 ACS on STN

139:134051 Electrical conductivity of π-conjugated organoboron polymers upon n-type doping. Kobayashi, H.; Sato, N.; Ichikawa, Y.; Miyata, M.; Chujo, Y.; Matsuyama, T. (Research Reactor Institute, Kyoto University, Osaka, 590-0494, Japan). Synthetic Metals, 135-136, 393-394 (English) 2003. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier Science B.V..

AB The organoboron polymers contg. B in the main-chain are electron deficient π-conjugated systems, where π-conjugation length is extended via the vacant p-orbital of the boron atom. Polymn. of 2,7-diethynylfluorene or 1,4-diethynylbenzene with 2,4,6-triisopropylphenylborane produced the corresponding copolymers. The 2,7-diethynylfluorene-2,4,6-triisopropylphenylborane copolymer doped with triethylamine (TEA) and I2 had elec. cond. was 10-6 and 10-8 S/cm, resp. The cond. of 1,4-diethynylbenzene-2,4,6-triisopropylphenylborane **copolymer** the **cond.** was 10-7 and 10-8S/cm, for TEA and I2 counterion sources, resp. The organoboron main-chain polymers are n-type π-conjugated polymers.

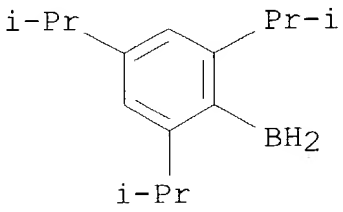
IT **503073-06-1P**, 1,4-Diethynylbenzene-2,4,6-triisopropylphenylborane **copolymer** **557099-49-7P**, 1,4-Diethynylbenzene;2,4,6-triisopropylphenylborane **copolymer**, SRU **566928-99-2P**, 2,7-Diethynylfluorene-2,4,6-triisopropylphenylborane **copolymer** **566929-00-8P**, 2,7-Diethynylfluorene-2,4,6-triisopropylphenylborane **copolymer**, SRU
(elec. **cond.** and optical absorption of prepd. π-conjugated phenylborane polyacetylenes vs. n-type counterion source content)

RN 503073-06-1 HCA

CN Borane, [2,4,6-tris(1-methylethyl)phenyl]-, polymer with 1,4-diethynylbenzene (9CI) (CA INDEX NAME)

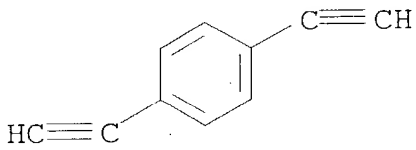
CM 1

CRN 145434-23-7
CMF C15 H25 B

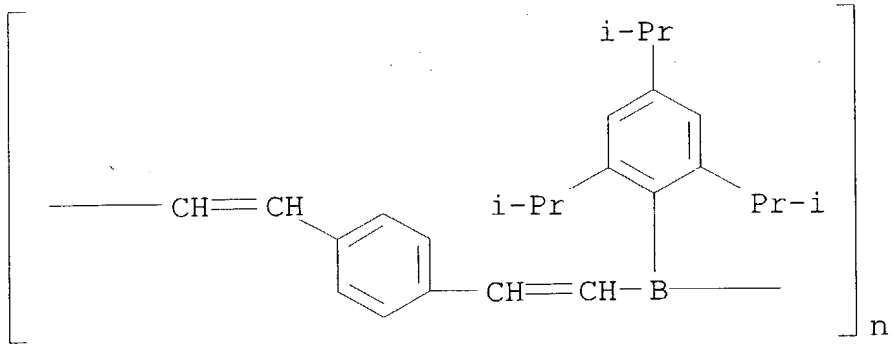


CM 2

CRN 935-14-8
CMF C10 H6



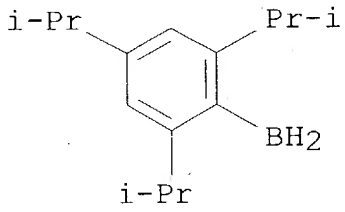
RN 557099-49-7 HCA
CN Poly[[[2,4,6-tris(1-methylethyl)phenyl]borylene]-1,2-ethenediyl-1,4-phenylene-1,2-ethenediyl] (9CI) (CA INDEX NAME)



RN 566928-99-2 HCA
CN Borane, [2,4,6-tris(1-methylethyl)phenyl]-, polymer with 2,7-diethynyl-9H-fluorene (9CI) (CA INDEX NAME)

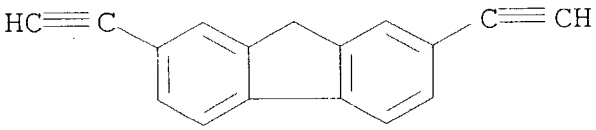
CM 1

CRN 145434-23-7
CMF C15 H25 B

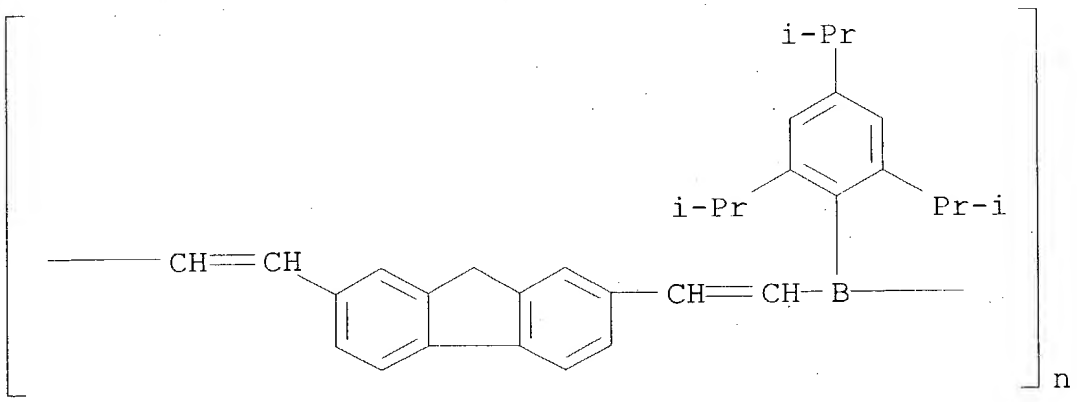


CM 2

CRN 94463-11-3
CMF C17 H10



RN 566929-00-8 HCA
CN Poly[[[2,4,6-tris(1-methylethyl)phenyl]borylene]-1,2-ethendiyl-9H-fluorene-2,7-diyl-1,2-ethenediyl] (9CI) (CA INDEX NAME)



CC 36-5 (Physical Properties of Synthetic High Polymers)
Section cross-reference(s): 35, 76

IT **Conducting polymers**
Electric conductivity
Optical absorption
(elec. **cond.** and optical absorption of prepd. π-conjugated phenylborane polyacetylenes vs. n-type counterion

source content)

IT **503073-06-1P**, 1,4-Diethynylbenzene-2,4,6-triisopropylphenylborane **copolymer 557099-49-7P**, 1,4-Diethynylbenzene;2,4,6-triisopropylphenylborane **copolymer**, SRU **566928-99-2P**, 2,7-Diethynylfluorene-2,4,6-triisopropylphenylborane **copolymer 566929-00-8P**, 2,7-Diethynylfluorene-2,4,6-triisopropylphenylborane **copolymer**, SRU
(elec. **cond.** and optical absorption of prepd. π-conjugated phenylborane polyacetylenes vs. n-type counterion source content)

BD

L30 ANSWER 5 OF 28 HCA COPYRIGHT 2004 ACS on STN
138:369323 Ion Conductive Characteristics of Alkylborane Type and Boric Ester Type **Polymer Electrolytes** Derived from Mesitylborane. Matsumi, Noriyoshi; Sugai, Kazunori; Ohno, Hiroyuki (Department of Biotechnology, Tokyo University of Agriculture Technology, Koganei, Tokyo, 184-8588, Japan). Macromolecules, 36(7), 2321-2326 (English) 2003. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB Alkylborane and boric ester **polymer electrolytes** bearing mesitylboron units were prepd. by hydroboration polymn. or dehydrocoupling polymn. using mesitylborane. The well-defined organoboron **polymer electrolytes** showed ionic cond. of 3.05 + 10-5 - 5.22 + 10-6 S/cm at 50° in the presence of various lithium salts. Max. cond. was obsd. in the presence of lithium bis(trifluoromethanesulfonyl)imide LiTFSI. The lithium ion transference no. was calcd. to be 0.35-0.50, indicating significant anion trapping effect of the organoboron unit. The alkylborane polymer exhibited a higher lithium ion transference no. due to stronger Lewis acidity of the alkylborane unit. The organoboron **polymer electrolytes** were subjected to reaction with organolithium reagents to immobilize the anion to the polymer chain as borate anion. After the reaction with phenyllithium, the ionic cond. was 9.45 + 10-7-8.22 + 10-7S/cm, with a lithium ion transference no. of 0.78-0.82. When pentafluorophenyllithium or naphthyllithium was used as organolithium reagent, the cond. increased by 1 order of magnitude due to improved dissocn. of the lithium borate unit in the presence of electron-withdrawing substituents.

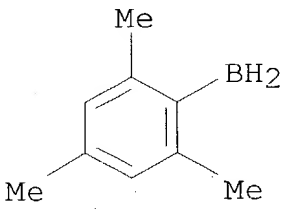
IT **446823-54-7P**, Mesitylborane-triethylene glycol copolymer **446823-55-8P**, Mesitylborane-tetraethylene glycol copolymer **446823-56-9P**, Mesitylborane-triethylene glycol diallyl ether copolymer, SRU **446823-57-0P**, Mesitylborane-tetraethylene glycol diallyl ether copolymer, SRU **522665-78-7P**, Mesitylborane-triethylene glycol diallyl ether copolymer **522665-79-8P**, Mesitylborane-tetraethylene glycol diallyl

ether copolymer
(prepn. and ion cond. and lithium transference no. of polyether-alkylboranes and -boric esters as **polymer electrolytes**)

RN 446823-54-7 HCA
CN Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-, polymer with (2,4,6-trimethylphenyl)borane (9CI) (CA INDEX NAME)

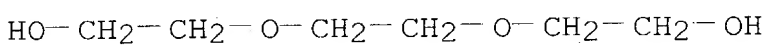
CM 1

CRN 45741-00-2
CMF C9 H13 B



CM 2

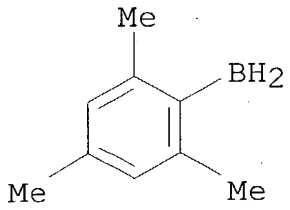
CRN 112-27-6
CMF C6 H14 O4



RN 446823-55-8 HCA
CN Ethanol, 2,2'-[oxybis(2,1-ethanediyloxy)]bis-, polymer with (2,4,6-trimethylphenyl)borane (9CI) (CA INDEX NAME)

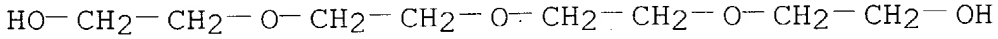
CM 1

CRN 45741-00-2
CMF C9 H13 B



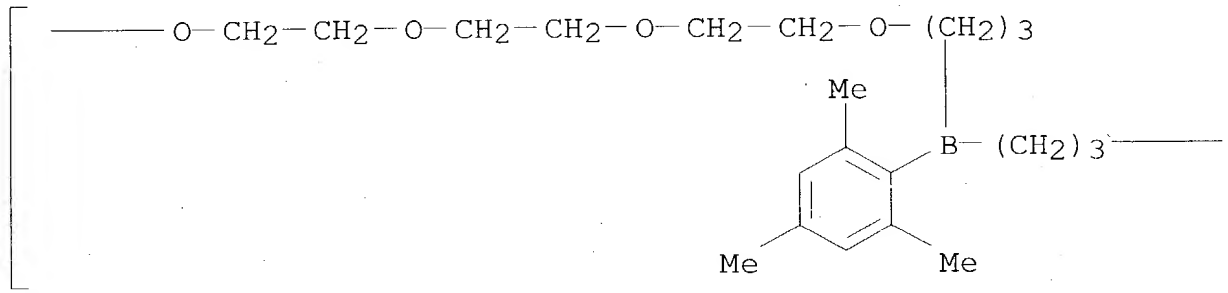
CM 2

CRN 112-60-7
CMF C8 H18 O5



RN 446823-56-9 HCA
CN Poly[oxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,3-propanediyl[(2,4,6-trimethylphenyl)borylene]-1,3-propanediyl] (9CI) (CA INDEX NAME)

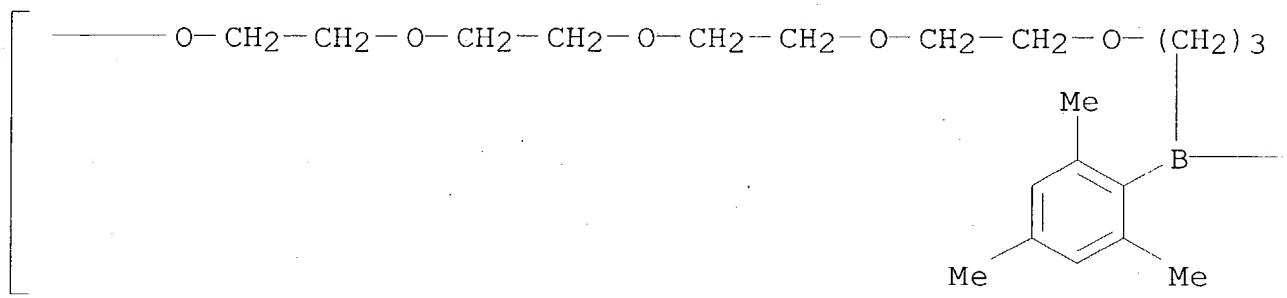
PAGE 1-A



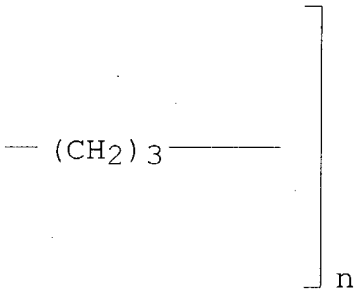
PAGE 1-B

RN 446823-57-0 HCA
CN Poly[oxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,3-propanediyl[(2,4,6-trimethylphenyl)borylene]-1,3-propanediyl] (9CI) (CA INDEX NAME)

PAGE 1-A



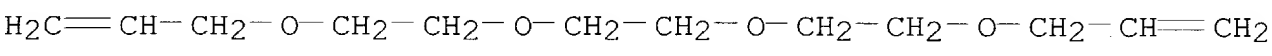
PAGE 1-B



RN 522665-78-7 HCA
CN Borane, (2,4,6-trimethylphenyl)-, polymer with 4,7,10,13-tetraoxahexadeca-1,15-diene (9CI) (CA INDEX NAME)

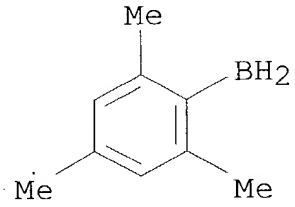
CM 1

CRN 90736-68-8
CMF C12 H22 O4



CM 2

CRN 45741-00-2
CMF C9 H13 B

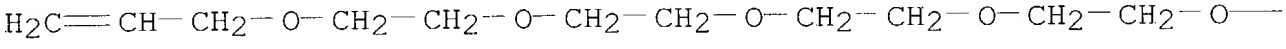


RN 522665-79-8 HCA
CN Borane, (2,4,6-trimethylphenyl)-, polymer with 4,7,10,13,16-pentaoxanonadeca-1,18-diene (9CI) (CA INDEX NAME)

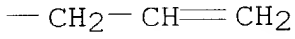
CM 1

CRN 58185-54-9
CMF C14 H26 O5

PAGE 1-A

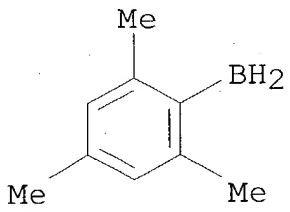


PAGE 1-B



CM 2

CRN 45741-00-2
CMF C9 H13 B



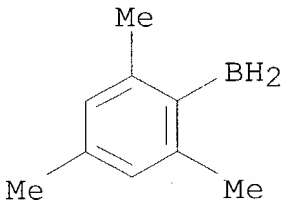
IT **446823-54-7DP**, Mesitylborane-triethylene glycol copolymer, lithium complexes **446823-55-8DP**, Mesitylborane-tetraethylene glycol copolymer, lithium complexes **522665-78-7DP**, lithium complexes **522665-79-8DP**,

lithium complexes
(prepn. and ion cond. and lithium transference no. of polyether-alkylboranes and -boric esters as **polymer electrolytes**)

RN 446823-54-7 HCA
CN Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-, polymer with (2,4,6-trimethylphenyl)borane (9CI) (CA INDEX NAME)

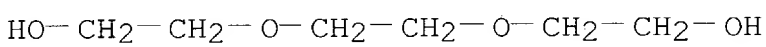
CM 1

CRN 45741-00-2
CMF C9 H13 B



CM 2

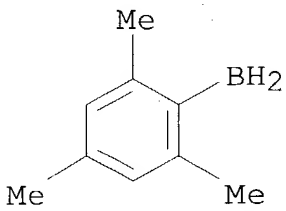
CRN 112-27-6
CMF C6 H14 O4



RN 446823-55-8 HCA
CN Ethanol, 2,2'-[oxybis(2,1-ethanediyloxy)]bis-, polymer with (2,4,6-trimethylphenyl)borane (9CI) (CA INDEX NAME)

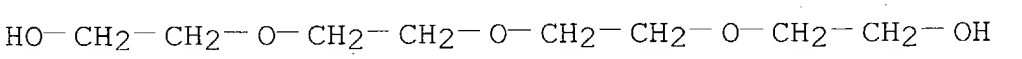
CM 1

CRN 45741-00-2
CMF C9 H13 B



CM 2

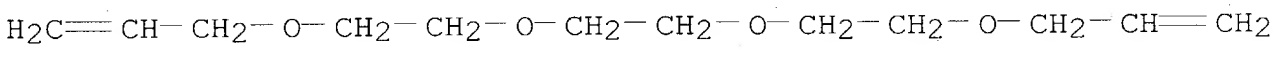
CRN 112-60-7
CMF C8 H18 O5



RN 522665-78-7 HCA
CN Borane, (2,4,6-trimethylphenyl)-, polymer with 4,7,10,13-tetraoxahexadeca-1,15-diene (9CI) (CA INDEX NAME)

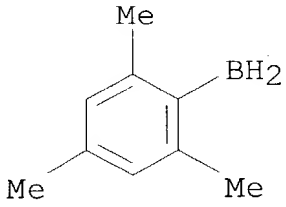
CM 1

CRN 90736-68-8
CMF C12 H22 O4



CM 2

CRN 45741-00-2
CMF C9 H13 B

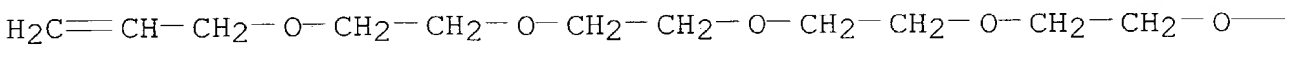


RN 522665-79-8 HCA
CN Borane, (2,4,6-trimethylphenyl)-, polymer with 4,7,10,13,16-pentaoxanonadeca-1,18-diene (9CI) (CA INDEX NAME)

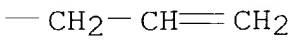
CM 1

CRN 58185-54-9
CMF C14 H26 O5

PAGE 1-A

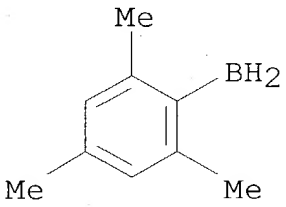


PAGE 1-B



CM 2

CRN 45741-00-2
CMF C9 H13 B



CC 35-7 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 36, 76

ST alkylborane **polymer electrolyte** prepn
hydroboration **polymn**; boric ester polymer prepn
dehydrocoupling polymn mesitylborane; ionic cond transference no
boron polymer organolithium effect

IT Polyoxyalkylenes, preparation
(alkylboranes and boric esters; prepn. and ion cond. and lithium transference no. of polyether-alkylboranes and -boric esters as **polymer electrolytes**)

IT Coupling reaction
(dehydrocoupling; prepn. and ion cond. and lithium transference no. of polyether-alkylboranes and -boric esters as **polymer electrolytes**)

IT Polymerization
(hydroboration and dehydrocoupling; prepn. and ion cond. and lithium transference no. of polyether-alkylboranes and -boric esters as **polymer electrolytes**)

IT Hydroboration
Ionic conductivity
Lewis acidity
NMR (nuclear magnetic resonance)
Oxidation potential
Polymer electrolytes
Transference number
(prepn. and ion cond. and lithium transference no. of polyether-alkylboranes and -boric esters as **polymer**

electrolytes)

IT 7439-93-2P, Lithium, preparation
(complexes with polyether-alkylboranes and -boric esters; prepn. and ion cond. and lithium transference no. of polyether-alkylboranes and -boric esters as **polymer electrolytes**)

IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide
(electrolyte; prepn. and ion cond. and lithium transference no. of polyether-alkylboranes and -boric esters as **polymer electrolytes**)

IT **446823-54-7P**, Mesitylborane-triethylene glycol copolymer **446823-55-8P**, Mesitylborane-tetraethylene glycol copolymer **446823-56-9P**, Mesitylborane-triethylene glycol diallyl ether copolymer, SRU **446823-57-0P**, Mesitylborane-tetraethylene glycol diallyl ether copolymer, SRU **522665-78-7P**, Mesitylborane-triethylene glycol diallyl ether copolymer **522665-79-8P**, Mesitylborane-tetraethylene glycol diallyl ether copolymer
(prepn. and ion cond. and lithium transference no. of polyether-alkylboranes and -boric esters as **polymer electrolytes**)

IT 591-51-5DP, Phenyllithium, reaction products with polyether-alkylboranes and -boric esters 1076-44-4DP, Pentafluorophenyllithium, reaction products with polyether-alkylboranes and -boric esters 27939-69-1DP, Naphthyllithium, reaction products with polyether-alkylboranes and -boric esters **446823-54-7DP**, Mesitylborane-triethylene glycol copolymer, lithium complexes **446823-55-8DP**, Mesitylborane-tetraethylene glycol copolymer, lithium complexes **522665-78-7DP**, lithium complexes **522665-79-8DP**, lithium complexes
(prepn. and ion cond. and lithium transference no. of polyether-alkylboranes and -boric esters as **polymer electrolytes**)

L30 ANSWER 9 OF 28 HCA COPYRIGHT 2004 ACS on STN BD
137:169952 Selective Ion Transport in Organoboron **Polymer Electrolytes** Bearing a Mesitylboron Unit. Matsumi, Noriyoshi; Sugai, Kazunori; Ohno, Hiroyuki (Department of Biotechnology, Tokyo University of Agriculture & Technology, Koganei Tokyo, 184-8588, Japan). Macromolecules, 35(15), 5731-5733 (English) 2002. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB Synthesis of organoboron **polymer electrolyte** was examd. by hydroboration polymn. or dehydrocoupling polymn. of

mesitylborane with monomers having an oligo(ethylene oxide) unit. The resulting polymer was doped with lithium perchlorate or lithium trifluoromethanesulfonate for evaluation such as cond. The polymer was also reacted with Bu lithium or Ph lithium.

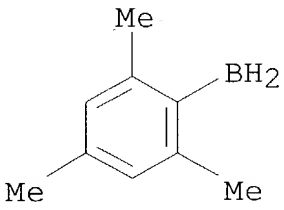
IT **446823-52-5DP**, Triethylene glycol divinyl ether-Mesitylborane copolymer, lithium complex, contg. trifluoromethanesulfonate **446823-53-6DP**, Tetraethylene glycol divinyl ether-mesitylborane copolymer, lithium complex, contg. perchlorate or reaction product with Ph lithium **446823-54-7DP**, Mesitylborane-triethylene glycol copolymer, lithium complex, contg. TFSI or trifluoromethanesulfonate **446823-55-8DP**, Mesitylborane-tetraethylene glycol copolymer, lithium complex, contg. perchlorate or trifluoromethanesulfonate or reaction product with Ph lithium **446823-56-9DP**, lithium complex, contg. trifluoromethanesulfonate **446823-57-0DP**, lithium complex, contg. perchlorate or reaction product with Ph lithium **446823-58-1DP**, lithium complex, contg. perchlorate or trifluoromethanesulfonate or reaction product with Ph lithium **446823-59-2DP**, lithium complex, contg. perchlorate or trifluoromethanesulfonate or reaction product with Ph lithium
(prepn. and property of organoboron **polymer electrolytes** bearing a mesitylboron unit)

RN 446823-52-5 HCA

CN Borane, (2,4,6-trimethylphenyl)-, polymer with 3,6,9,12-tetraoxatetradeca-1,13-diene (9CI) (CA INDEX NAME)

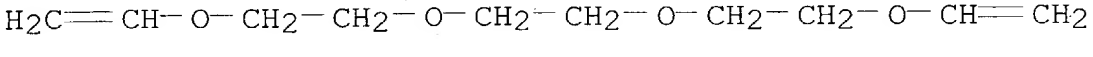
CM 1

CRN 45741-00-2
CMF C9 H13 B



CM 2

CRN 765-12-8
CMF C10 H18 O4

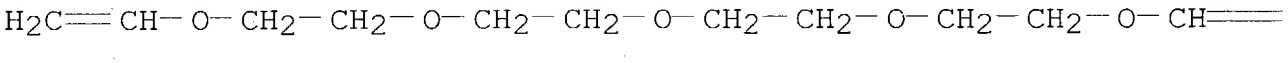


RN 446823-53-6 HCA
CN Borane, (2,4,6-trimethylphenyl)-, polymer with 3,6,9,12,15-pentaoxaheptadeca-1,16-diene (9CI) (CA INDEX NAME)

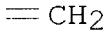
CM 1

CRN 83416-06-2
CMF C12 H22 O5

PAGE 1-A

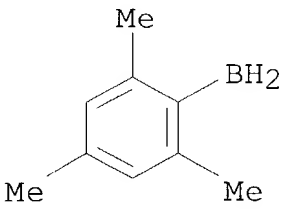


PAGE 1-B



CM 2

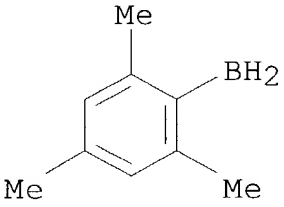
CRN 45741-00-2
CMF C9 H13 B



RN 446823-54-7 HCA
CN Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-, polymer with (2,4,6-trimethylphenyl)borane (9CI) (CA INDEX NAME)

CM 1

CRN 45741-00-2
CMF C9 H13 B



CM 2

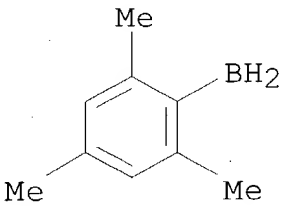
CRN 112-27-6
CMF C6 H14 O4

HO— CH_2— CH_2— O— CH_2— CH_2— O— CH_2— CH_2— OH

RN 446823-55-8 HCA
CN Ethanol, 2,2'-[oxybis(2,1-ethanediyloxy)]bis-, polymer with (2,4,6-trimethylphenyl)borane (9CI) (CA INDEX NAME)

CM 1

CRN 45741-00-2
CMF C9 H13 B



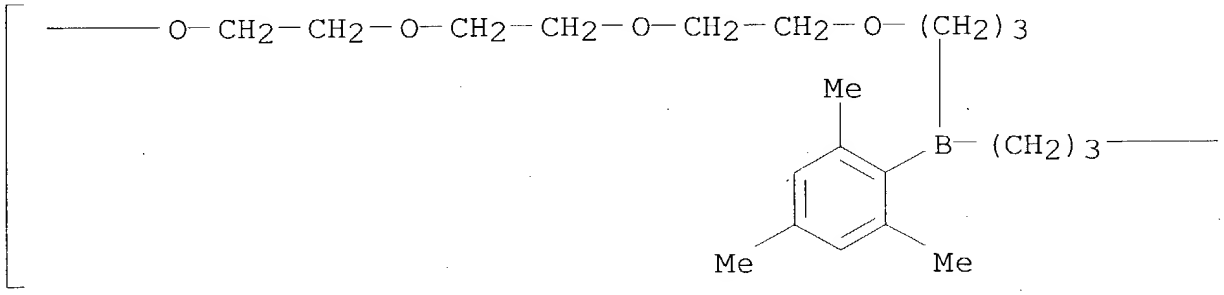
CM 2

CRN 112-60-7
CMF C8 H18 O5

HO— CH_2— CH_2— O— CH_2— CH_2— O— CH_2— CH_2— O— CH_2— CH_2— OH

RN 446823-56-9 HCA
CN Poly[oxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,3-propanediyl[(2,4,6-trimethylphenyl)borylene]-1,3-propanediyl] (9CI) (CA INDEX NAME)

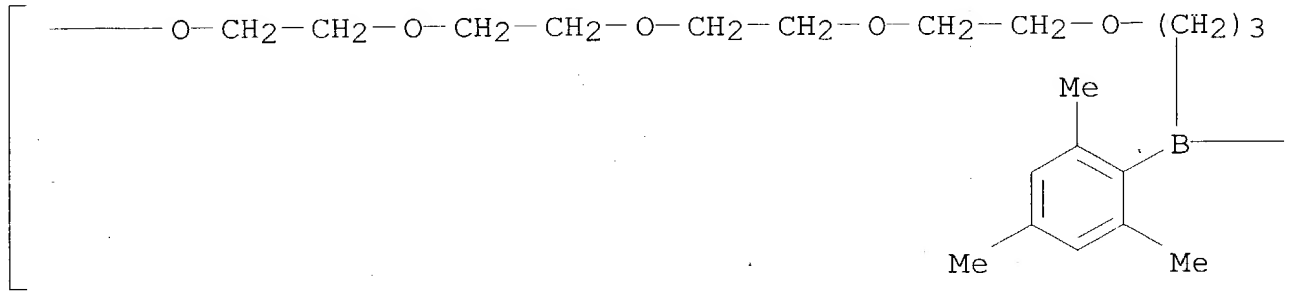
PAGE 1-A



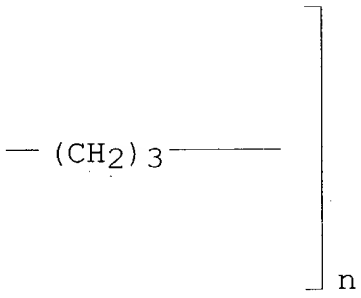
PAGE 1-B

RN 446823-57-0 HCA
CN Poly[oxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,3-propanediyl[(2,4,6-trimethylphenyl)borylene]-1,3-propanediyl] (9CI) (CA INDEX NAME)

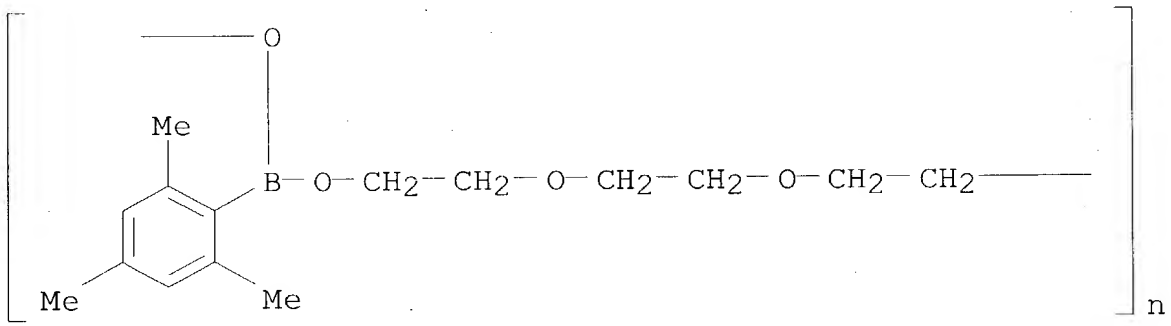
PAGE 1-A



PAGE 1-B

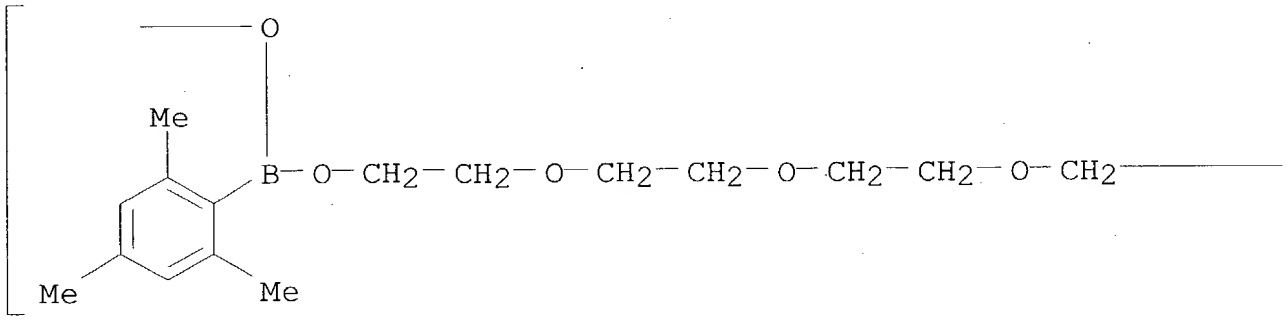


RN 446823-58-1 HCA
CN Poly[oxy[(2,4,6-trimethylphenyl)borylene]oxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,2-ethanediyl] (9CI) (CA INDEX NAME)

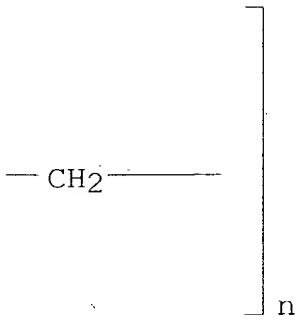


RN 446823-59-2 HCA
CN Poly[oxy[(2,4,6-trimethylphenyl)borylene]oxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,2-ethanediyloxy-1,2-ethanediyl] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



CC 35-8 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 76

IT Polymerization
(dehydrocoupling; in prepn. and property of organoboron **polymer electrolytes** bearing a mesitylboron unit)

IT Hydroboration
(in prepn. and property of organoboron **polymer electrolytes** bearing a mesitylboron unit)

IT Ionic conductivity
Polymer electrolytes
(prepn. and property of organoboron **polymer electrolytes** bearing a mesitylboron unit)

IT 109-72-8DP, n-Butyl lithium, reaction product with mesitylborane-triethylene glycol copolymer 591-51-5DP, Phenyl lithium, reaction product with mesitylborane-triethylene glycol copolymer 7439-93-2DP, Lithium, complex with mesitylborane-triethylene glycol copolymer, contg. perchlorate or trifluoromethanesulfonate **446823-52-5DP**, Triethylene glycol divinyl ether-Mesitylborane copolymer, lithium complex, contg. trifluoromethanesulfonate **446823-53-6DP**, Tetraethylene glycol divinyl ether-mesitylborane copolymer, lithium complex, contg. perchlorate or reaction product with Ph lithium **446823-54-7DP**, Mesitylborane-triethylene glycol copolymer, lithium complex, contg. TFSI or trifluoromethanesulfonate **446823-55-8DP**, Mesitylborane-tetraethylene glycol copolymer, lithium complex, contg. perchlorate or trifluoromethanesulfonate or reaction product with Ph lithium **446823-56-9DP**, lithium complex, contg. trifluoromethanesulfonate **446823-57-0DP**, lithium complex, contg. perchlorate or reaction product with Ph lithium **446823-58-1DP**, lithium complex, contg. perchlorate or trifluoromethanesulfonate or reaction product with Ph lithium **446823-59-2DP**, lithium complex, contg. perchlorate or

trifluoromethanesulfonate or reaction product with Ph lithium (prepn. and property of organoboron **polymer electrolytes** bearing a mesitylboron unit)

L30 ANSWER 15 OF 28 HCA COPYRIGHT 2004 ACS on STN
132:152365 Reflective and **conductive** star **polymers**, their preparation and use for coatings. Wang, Fei; Rauh, R. David (Eic Laboratories, Inc., USA). U.S. US 6025462 A 20000215, 17 pp. (English). CODEN: USXXAM. APPLICATION: US 1998-33882 19980303. PRIORITY: US 1997-40509 19970306.

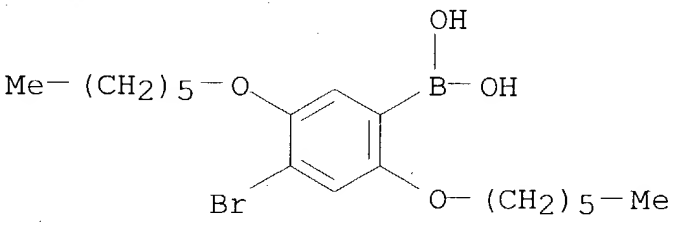
AB **Conductive polymers** having a star structure comprising a central core with multiple attachment sites and conjugated charge transporting arms. The cores are derived from hyperbranched polymers, dendrimers, or other mols. with a multiplicity of attachment sites. The arms are derived from conjugated oligomers and polymers such as polythiophene, polyaniline or polyphenylene. The polymers allow assembly of the macromols. in all 3 dimensions in the solid state and highly reflective, smooth coatings applied from soln. A hyperbranched 1,3,5-polyphenylene core coupled with poly(3-hexylthiophene) arms provides lustrous reflective gold-color coatings.

IT **257933-30-5P**
(hyperbranched star polymers, polyphenylene core-initiated; reflective and **conductive** hyperbranched star **polymers** having high melt temp., cond. and luster, and surface smoothness)

RN 257933-30-5 HCA
CN Boronic acid, [4-bromo-2,5-bis(hexyloxy)phenyl]-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 160256-87-1
CMF C18 H30 B Br O4



B does not appear to be present in final polymer

IC ICM C08G015-00
NCL 528377000
CC 35-7 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 42

IT Optical reflectors
(coatings; reflective and **conductive** hyperbranched star **polymers** having high melt temp., cond. and luster, and surface smoothness)

IT Polyphenyls
(dendritic, hyperbranched core; reflective and **conductive** hyperbranched star **polymers** having high melt temp., cond. and luster, and surface smoothness)

IT Polyphenyls
(hyperbranched star polymers, polyphenylene core-initiated; reflective and **conductive** hyperbranched star **polymers** having high melt temp., cond. and luster, and surface smoothness)

IT Polymers, preparation
(polythiophenes, hyperbranched star polymers, polyphenylene core-initiated; reflective and **conductive** hyperbranched star **polymers** having high melt temp., cond. and luster, and surface smoothness)

IT **Conducting polymers**
(reflective and **conductive** hyperbranched star **polymers** having high melt temp., cond. and luster, and surface smoothness)

IT Polymers, preparation
(star-branched; reflective and **conductive** hyperbranched star **polymers** having high melt temp., cond. and luster, and surface smoothness)

IT **257933-30-5P** 257933-33-8P
(hyperbranched star polymers, polyphenylene core-initiated; reflective and **conductive** hyperbranched star **polymers** having high melt temp., cond. and luster, and surface smoothness)

L30 ANSWER 18 OF 28 HCA COPYRIGHT 2004 ACS on STN
130:82087 Comparison of geometries and electronic structures of polyacetylene, polyborole, polycyclopentadiene, polypyrrole, polyfuran, polysilole, polyphosphole, polythiophene, polyselenophene and polytellurophene. Salzner, U.; Lagowski, J. B.; Pickup, P. G.; Poirier, R. A. (Dep. Chem., Memorial Univ. of Newfoundland, St. John's, NF, A1B 3X7, Can.). Synthetic Metals, 96(3), 177-189 (English) 1998. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier Science S.A..

AB The geometry of monomers through hexamers [six ring chain] of cyclopentadiene, pyrrole, furan, silole, phosphole, thiophene, selenophene and tellurophene, and monomers through nonamers of borole were optimized employing d. functional theory with a slightly modified B3P86 hybrid functional. Bandgaps and bandwidths were

obtained by extrapolating the appropriate energy levels of trimers through hexamers (hexamers through nonamers for borole) to infinity. Bandgaps increase with increasing π-donor strength of the heteroatom. In general, second period heteroatoms lead to larger bandgaps than their higher period analogs. Polyborole is predicted to have a small or no energy gap between the occupied and the unoccupied π-levels. Due to its electron deficient nature, polyborole differs significantly from the other polymers. It has a quinoid structure and a large electron affinity. The bandgap of heterocycles with weak donors (CH2, SiH2 and PH) is close to that of polyacetylene. For polyphosphole this is due to the pyramidal geometry at phosphorus which prevents interaction of the phosphorus lone pair with the π-system. The bandgap of polypyrrole is the largest of all polymers studied, attributed to the large π-donor strength of nitrogen. Polythiophene has the third largest bandgap. The valence bandwidth differs considerably for the various **conducting polymers** since the avoided crossing between the flat HOMO-1 band and the wide HOMO band occurs at different positions. The widths of the wide HOMO bands are similar for all systems studied. All of the polymers studied have strongly delocalized conjugated polymer π-systems.

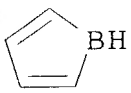
IT **218965-82-3**, Polyborole
(electronic structure and bond geometry of polycyclopentadiene and heterocyclic analogs and corresponding ring chain oligomers)

RN 218965-82-3 HCA

CN 1H-Borole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 287-87-6
CMF C4 H5 B



CC 36-5 (Physical Properties of Synthetic High Polymers)
Section cross-reference(s): 27, 65

ST heterocyclic polymer electronic structure conjugation cond; polyborole polycyclopentadiene electronic structure density functional theory; polypyrrole polyfuran polysilole electronic structure band gap; polyphosphole polythiophene polyselenophene polytellurophene **conducting polymer** valence bandwidth

IT **Conducting polymers**
(5-member ring heterocycles; electronic structure and bond geometry of polycyclopentadiene and heterocyclic analogs and

corresponding ring chain oligomers)

IT 109-97-7, Pyrrole 110-02-1, Thiophene 287-87-6, Borole 288-08-4, Tellurophene 492-97-7, 2,2'-Bithiophene 542-92-7, Cyclopentadiene, properties 3260-45-5, 2,2',2''-Tripyrrole 4723-64-2, Silole 5632-29-1, Tetrathiophene 5660-45-7 10087-64-6, 2,2'-Bispyrrole 21423-87-0, 2,2'-Bicyclopentadiene 25067-54-3, Polyfuran 25067-58-7, Polyacetylene 25233-34-5, Polythiophene 25568-84-7 30604-81-0, Polypyrrole 86450-98-8, 2,2':5',2'':5'',2'''-Quater-1H-pyrrole 88493-55-4, Sexithiophene 89231-09-4, Polyselenophene 89231-10-7, Polytellurophene 108664-04-6, 2,2':5',2'':5'',2''':5''',2''''-Quinque-1H-pyrrole 108664-05-7, 2,2':5',2'':5'',2''':5''',2'''':5'''',2'''''-Sexi-1H-pyrrole 111744-23-1, Terthiophene 156839-23-5, 2,2':5',2'':5'',2'''-Quater-1H-phosphole 156839-34-8, Polyphosphole 160720-90-1, 2,2'-Bitellurophene 160720-91-2, 2,2':5',2''-Tertellurophene 163707-86-6 173413-62-2, 2,2'-Bis(silole) 205824-76-6 **218965-82-3**, Polyborole 218965-83-4, 2,2':5',2'':5'',2'''-Quatertellurophene 218965-84-5 218965-85-6 218965-86-7, 2,2'-Biborole 218965-87-8, 2,2':5',2''-Ter-1H-borole 218965-88-9, Quaterborole 218965-89-0 218965-90-3 218965-91-4 218965-92-5 218965-93-6 218965-94-7, 1,1':4',1''-Ter-1,3-cyclopentadiene 218965-95-8 218965-96-9 218965-97-0, 2,2':5',2''-Tersilacyclopenta-2,4-diene 218965-98-1 218965-99-2 218966-00-8

(electronic structure and bond geometry of polycyclopentadiene and heterocyclic analogs and corresponding ring chain oligomers)

L30 ANSWER 24 OF 28 HCA COPYRIGHT 2004 ACS on STN

103:204335 Design of novel **polymers** with metallic **conductivity**: polyazacetylene and polyboracetylene. Tanaka, Kazuyoshi; Ueda, Katsuya; Koike, Tsuneaki; Ando, Masanori; Yamabe, Tokio (Fac. Eng., Kyoto Univ., Kyoto, 606, Japan). Physical Review B: Condensed Matter and Materials Physics, 32(6), 4279-81 (English) 1985. CODEN: PRBMDO. ISSN: 0163-1829.

AB Based on the idea of controlling the no. of π-electrons in the polymer skeleton, novel polymers, polyazacetylene and polyboroacetylene, were designed theor. that will show metallic cond. without doping. Examn. of the electronic structures of these polymers in planar geometries shows that they have no band gap between the valence and conduction bands.

IT **99126-26-8**

(elec. conductor, theor. design of)

RN 99126-26-8 HCA

CN Poly(borylidynemethylidyne) (9CI) (CA INDEX NAME)

CC 76-2 (Electric Phenomena)
Section cross-reference(s): 65
ST **conductor polymer** theor design; polyazacetylene conductor theor design; polyboracetylene conductor theor design; electronic structure **polymer conductor**
IT 33182-46-6 **99126-26-8**
(elec. conductor, theor. design of)

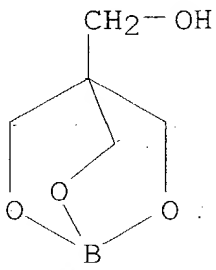
L30 ANSWER 26 OF 28 HCA COPYRIGHT 2004 ACS on STN
76:100234 Synthesis and study of electrophysical properties of ferrocene- and boron-containing polymers with a system of conjugated bonds. Yurlova, G. A.; Chumakov, Yu. V.; Ezhova, T. M.; Dzhashi, L. V.; Sosin, S. L.; Korshak, V. V. (Inst. Elementoorg. Soedin., Moscow, USSR). Vysokomolekulyarnye Soedineniya, Seriya A, 13(12), 2761-7 (Russian) 1971. CODEN: VYSAAF. ISSN: 0507-5475.
AB Elec. cond. (γ) vs. temp. (T) functions of polyconjugated polymers are affected differently by electron-accepting and electron-donating substituents. The presence of electron-accepting B in partially debutylated poly(di-Bu ethyneboronate) [**25718-64-3**] (I) does not change the character of the γ vs. T relation in comparison with polyacetylene (II) [25067-58-7], but γ of I is lower. The presence of electron-donating ferrocenyl groups in poly(ferrocenylacetylene)*(III), partially dehydrochlorinated poly[(1-chloro-2-formylvinyl)ferrocene] (IV), poly[1,1-bis(1-chloro-2-formylvinyl)ferrocene], or poly(1,1'-diisopropenylferrocene) changes the character of the γ vs. T relation as compared with that of II. Substitution of II with electron-accepting or withdrawing groups modifies also the temp. effect on its thermo-emf. I and III were prepd. by radiation-induced polymn. in the presence of NiBr2.[PPh3]2 catalyst (Daniels, W. E., 1964). IV was obtained by heating the monomer in Me2SO soln. contg. MeSOCH2Na (Kriz, J., et al., 1967).
CC 35 (Synthetic High Polymers)
ST polyconjugated **polymer** substituent **cond**; polyacetylene contg boron; ferrocene contg. polyacetylene

L30 ANSWER 27 OF 28 HCA COPYRIGHT 2004 ACS on STN e⁻ conductive
73:35801 Polymeric pentaerythritolboric acid. Svarcs, E.; Grundsteins, V.; Ievins, A. (Inst. Neorg. Khim., Riga, USSR). Latvijas PSR Zinatnu Akademijas Vestis, Kimijas Serija (2), 240-1 (Russian) 1970. CODEN: LZAKAM. ISSN: 0002-3248.
GI For diagram(s), see printed CA Issue.
AB Heating mixts. of pentaerythritol with B(OH)3 up to 152° gave cryst. I, m. 285-90°. Aq. solns. of I conduct electricity.
IT **28110-72-7P 29086-59-7P**
(prepn. of)

RN 28110-72-7 HCA
CN 2,6,7-Trioxa-1-borabicyclo[2.2.2]octane-4-methanol, homopolymer (9CI) (CA INDEX NAME)

CM 1

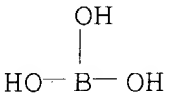
CRN 63185-97-7
CMF C5 H9 B O4



RN 29086-59-7 HCA
CN Boric acid (H3BO3), polyester with pentaerythritol (8CI) (CA INDEX NAME)

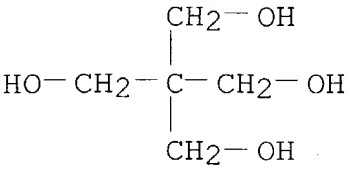
CM 1

CRN 10043-35-3
CMF B H3 O3



CM 2

CRN 115-77-5
CMF C5 H12 O4



CC 35 (Synthetic High Polymers)
ST boric acid pentaerythritol copolymer; pentaerythritol boric acid

copolymer; copolymer boric acid pentaerythritol; polyelectrolyte pentaerythritol boric acid copolymer; elec **conductor** **polymeric** pentaerythritol borate

IT **28110-72-7P 29086-59-7P**
(prepn. of)

L30 ANSWER 28 OF 28 HCA COPYRIGHT 2004 ACS on STN

69:87712 Polymers of ethylenic boron and ethylenic aluminum compounds. D'Alelio, Gaetano F. (Dal Mon Research Co.). U.S. US 3399175 19680827, 7 pp. (English). CODEN: USXXAM. APPLICATION: US 1965-455003 19650511.

AB A metal-contg. polymer is prepd. by polymg. CH2:CHMR2 or CH2:CHZMR2, where M is B or Al, R is hydrocarbyl, and Z is a divalent aliphatic, aliphatic-aromatic, or cycloaliphatic hydrocarbon group or a trivalent hydrocarbon group. The **polymn.** is **conducted** in an inert medium with a catalyst prepd. from the reaction product of a trialkylaluminum with TiCl4, TiCl3, or ZrCl3. Thus, 1 ml. TiCl4 in 50 ml. cyclohexane was added to a soln. of 5 ml. Et3Al and 15 ml. heptane under N, the mixt. heated 1 hr. at 40-50° and kept overnight at room temp. The catalyst soln. was cooled to < -20° and 50 g. vinyl(dimethyl)borane in 50 ml. cyclohexane under N was added. The mixt. was brought to room temp. and kept at room temp. for 24 hrs., 200 ml. cyclohexane added, the mixt. heated to reflux and filtered, and the filtrate was placed in vacuo to remove the solvent. The product shows a metal content corresponding to the theoretical value for poly[vinyl(dimethyl)borane], and upon ignition, the samples show excellent burning properties. Similarly catalysts prepd. utilize triisobutyl-aluminum, AlCl3, Al powder, and monomers used are vinyl(diethyl)aluminum, allyl(dimethyl)borane, and allyl(diethyl)aluminum.

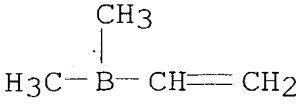
IT **29497-29-8P 29497-30-1P 29497-32-3P,**
preparation **29497-33-4P**, preparation **29531-61-1P**
(prepn. of)

RN 29497-29-8 HCA

CN Borane, dimethylvinyl-, polymers (8CI) (CA INDEX NAME)

CM 1

CRN 5846-37-7
CMF C4 H9 B

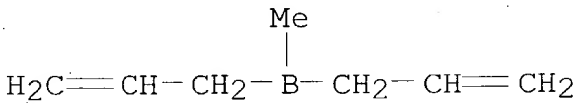


RN 29497-30-1 HCA

CN Borane, diallylmethyl-, polymers (8CI) (CA INDEX NAME)

CM 1

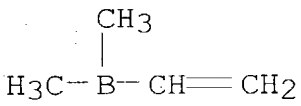
CRN 44648-76-2
CMF C7 H13 B



RN 29497-32-3 HCA
CN Borane, dimethylvinyl-, polymer with styrene (8CI) (CA INDEX NAME)

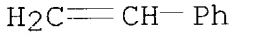
CM 1

CRN 5846-37-7
CMF C4 H9 B



CM 2

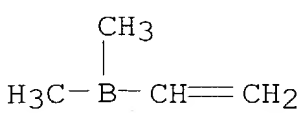
CRN 100-42-5
CMF C8 H8



RN 29497-33-4 HCA
CN Borane, dimethylvinyl-, polymer with ethylene (8CI) (CA INDEX NAME)

CM 1

CRN 5846-37-7
CMF C4 H9 B



CM 2

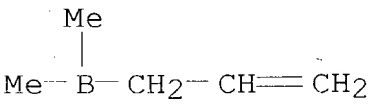
CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

RN 29531-61-1 HCA
CN Borane, allyldimethyl-, polymers (8CI) (CA INDEX NAME)

CM 1

CRN 44389-67-5
CMF C5 H11 B



NCL 260080000
CC 36 (Plastics Manufacture and Processing)
IT **29497-29-8P 29497-30-1P** 29497-31-2P
29497-32-3P, preparation **29497-33-4P**, preparation
29531-61-1P
(prepn. of)

=> d his l31-

FILE 'HCA' ENTERED AT 12:39:08 ON 13 FEB 2004
L31 3091 S L3
L32 207 S L31 AND (L1 OR L2)
L33 26 S L31 AND L1 AND L2
L34 13 S L33 NOT (L27 OR L28 OR L29 OR L30)

=> d l34 5,12 cbib abs hitstr hitind

L34 ANSWER 5 OF 13 HCA COPYRIGHT 2004 ACS on STN BD
137:48274 Ion **conductive** borosiloxane **polymers** and ion **conductive** materials useful as solid electrolytes. Fujinami, Tatsuo; Mehta, Mary Anne (Toyota Motor Corp., Japan; Konpon Kenkyusho K. K.). Jpn. Kokai Tokkyo Koho JP 2002179800 A2 20020626, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-375060 20001208.

AB Title polymers with good single ion cond. of cations comprise ion conductive mol. chains and anion-capturing borosiloxanes bonded to the ion conductive chains. Thus, 3.3 g trimethoxysilane deriv. with triethylene glycol monomethyl ether chains and 1.9 g triisopropoxyborane were heated in the presence of hydrogen bromide and water to give an ion **conductive polymer,** which was dissolved in a dry THF, lithium trifluoromethanesulfonate was added, and THF was removed to give a solid electrolyte.

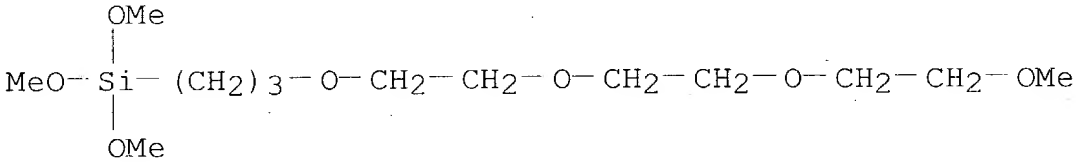
IT **438572-99-7DP,** complexes with lithium and optionally polyethylene glycol
(prepn. of ion **conductive** borosiloxane **polymers** for solid **electrolytes**)

RN 438572-99-7 HCA

CN Boric acid (H3BO3), tris(1-methylethyl) ester, polymer with 3,3-dimethoxy-2,7,10,13,16-pentaoxa-3-silaheptadecane (9CI) (CA INDEX NAME)

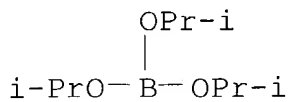
CM 1

CRN 132388-45-5
CMF C13 H30 O7 Si



CM 2

CRN 5419-55-6
CMF C9 H21 B O3



IC ICM C08G079-08
ICS C08G077-398; C08K003-00; C08L085-04; H01M006-18; H01M010-40

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52, 76

IT Silsesquioxanes
(boron-contg., lithium complexes; prepn. of ion **conductive** borosiloxane **polymers** for solid **electrolytes**)

IT Polyoxyalkylenes, uses
(complexes with lithium and borosiloxanes; prepn. of ion **conductive** borosiloxane **polymers** for solid **electrolytes**)

IT Ionic **conductors**
(**polymeric**; prepn. of ion **conductive** borosiloxane **polymers** for solid **electrolytes**)

IT **Polymer electrolytes**
(prepn. of ion **conductive** borosiloxane **polymers** for solid **electrolytes**)

IT 7439-93-2DP, Lithium, borosiloxane complexes 25322-68-3DP, Polyethylene glycol, complexes with lithium and borosiloxanes 33454-82-9DP, Lithium trifluoromethanesulfonate, borosiloxane complexes 90076-65-6DP, Lithium bis(trifluoromethanesulfonyl)imide, borosiloxane complexes **438572-99-7DP**, complexes with lithium and optionally polyethylene glycol
(prepn. of ion **conductive** borosiloxane **polymers** for solid **electrolytes**)

IT 7447-41-8D, Lithium chloride, borosiloxane complexes 7550-35-8D, Lithium bromide, borosiloxane complexes 7791-03-9D, Lithium perchlorate, borosiloxane complexes 14283-07-9D, borosiloxane complexes 21324-40-3D, Lithium hexafluorophosphate, borosiloxane complexes
(prepn. of ion **conductive** borosiloxane **polymers** for solid **electrolytes**)

L34 ANSWER 13 OF 13 HCA COPYRIGHT 2004 ACS on STN
117:15891 Polypyrrole-based anion-exchange polymers. Mao, Huanyu; Pickup, Peter G. (Dep. Chem., Mem. Univ. Newfoundland, St. John's, NF, A1B 3X7, Can.). Journal of Physical Chemistry, 96(13), 5604-10 (English), 1992. CODEN: JPCHAX. ISSN: 0022-3654.

AB The prepn. and electrochem. of 2 polypyrroles with cationic substituents in position 3, and a precursor alkyl bromide substituted polymer, are reported. The electrochem. and ion-exchange properties of the new cationic polymers are similar to those of a previously reported N-substituted analog. However, their lower redox potentials (about -0.1 V vs. a NaCl calomel electrode) mean that they become conductive at less oxidizing potentials. This behavior is advantageous in the catalysis of ascorbate oxidn. The enhanced cond. at low potentials also greatly accelerates the electrochem. of electrostatically bound ferrocyanide. Surprisingly, the max. cond. of the new 3-substituted cationic polymers is lower than that of the N-substituted analog. Poly[(3-(3-bromopropyl)pyrrole] and cationic copolymers formed by its partial reaction with trimethylamine were used to probe the origin of this difference. Swelling of the **polymers** with **electrolyte** soln. and assocd. morphol. changes are important

factors.

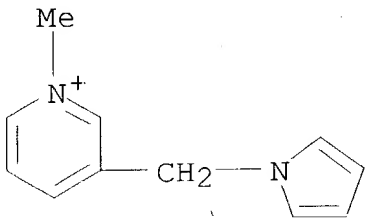
IT **125357-35-9P 141411-89-4P 141411-90-7P**
(electrode modified with, electrochem. prepn. and properties of)

RN 125357-35-9 HCA

CN Pyridinium, 1-methyl-3-(1H-pyrrol-1-ylmethyl)-, tetrafluoroborate(1-), homopolymer (9CI) (CA INDEX NAME)

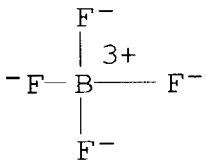
CM 1

CRN 122139-53-1
CMF C11 H13 N2



CM 2

CRN 14874-70-5
CMF B F4
CCI CCS

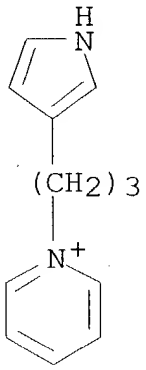


RN 141411-89-4 HCA

CN Pyridinium, 1-[3-(1H-pyrrol-3-yl)propyl]-, tetrafluoroborate(1-), homopolymer (9CI) (CA INDEX NAME)

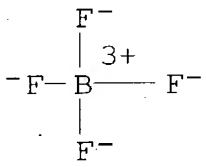
CM 1

CRN 141411-85-0
CMF C12 H15 N2



CM 2

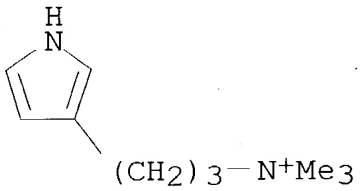
CRN 14874-70-5
CMF B F4
CCI CCS



RN 141411-90-7 HCA
CN 1H-Pyrrole-3-propanaminium, N,N,N-trimethyl-, tetrafluoroborate(1-), homopolymer (9CI) (CA INDEX NAME)

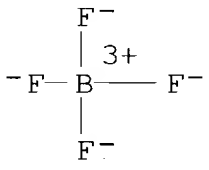
CM 1

CRN 141411-87-2
CMF C10 H19 N2



CM 2

CRN 14874-70-5
CMF B F4
CCI CCS



CC 72-2 (Electrochemistry)
Section cross-reference(s): 26, 35, 36, 66
IT Electric **conductors, polymeric**
(of polypyrroles with cationic substituents)
IT **125357-35-9P 141411-89-4P 141411-90-7P**
(electrode modified with, electrochem. prepn. and properties of)